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ON THE COVER

The grandiose *Kittiwake* in Grand Cayman epitomizes the beauty of wreck diving.

PHOTOGRAPH BY
SCOTT JOHNSON

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Florida boasts world-class wrecks, but **we like diving the wall-flowers**. Plus: what our readers have to say and the chance to win a Cressi mask-and-snorkel set.

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Elena Kalis Bahamas

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- Lorna Dockerill, editor (Professional Photographer Magazine UK)



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TALK

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WALLFLOWER WRECKS

Famous wrecks are like the popular kids in high school — good-looking, cool and charismatic. When divers show up at destinations like Truk Lagoon, the Great Lakes, North Carolina and Bermuda, they want to dive celebrated wrecks like *Fujikawa Maru*, *Sweepstakes*, *U-352* and *Hermes*.

Here in Florida, where *Scuba Diving's* editorial office is located, we've giant-strided onto the best of the Sunshine State's wreck and artificial-reef offerings.

From the Panhandle to West Palm and the Keys, from the Atlantic to the Gulf, Florida has some pretty awesome sunken ships — the *Spiegel Grove*,

Vandenberg and *Oriskany* are in our backyard — but the state's waters also offer the chance to dive some of the lesser-known ones.

We tested BCs while diving on *Ancient Mariner*, a 165-foot former U.S. Coast Guard cutter that served as a sub chaser and convoy escort during World War II.

The "Mighty O" was

definitely a highlight on a dive trip to the Panhandle, but the blown-apart remains of the colorful *San Pablo* — a 315-foot cargo steamer off Pensacola with a fascinating, mysterious past — was a surprise thrill, especially after a sandbar shark joined us during our dive.

Both times we dived the fish-mobbed *Sheridan*, a 180-foot tug in the Gulf of Mexico off Clearwater, we saw huge goliath grouper. On our second visit, a spotted eagle ray stuck around for nearly the entire dive.

We witnessed the scuttling of the "Mighty Mo" — the USS *Mohawk*, a 165-foot World War II ship that was purpose-sunk

28 miles off Sanibel Island.

Later, we were on hand when steel-framed artwork by Andreas Franke was installed on the ship, turning it into a temporary underwater art museum.

Diving these wrecks gave us the idea for the "United States B-Side Wrecks" feature, starting on page 34. We hope it inspires you so the next time you're diving a crowd-pleasing, bucket-list wreck, you won't overlook a nearby wallflower. They're pretty cool too.

— PATRICIA WUEST,
EDITOR-IN-CHIEF



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LETTERS

DEBATE TIME

While there is a lot of great advice in the Lessons for Life article "Pushed to the Limit" (March/April), I have to take issue with the twice-mentioned idea that nitrox cannot increase both bottom time and safety. By planning a bottom time that is, for example, halfway between the air no-decompression limit for a specific depth and the nitrox no-decompression limit for that same depth, both a bottom time increase (perhaps small) and increase in safety is achieved (assuming, of course, the air NDL and nitrox NDL give approximately the same DCS risk). Another approach, if one follows the sound advice of not diving right to NDLs with any gas,

would be to dive to the air NDL when using nitrox but not push to the nitrox NDL.
— GUY PAGE, WINCHESTER, MASS.

Thanks for writing, Guy, and giving us food for thought. Your email has been chosen by the editors as the winner of a SeaLife Aquapod. We also asked our Lessons for Life columnist, Eric Douglas, to respond.

Eric Douglas: Mr. Page is correct. Technically, you could achieve a small statistical safety margin by splitting the difference between air and nitrox bottom times. The problem is, no one dives that way. Very few divers are even aware of their NDLs. They simply dive what their computers tell them they can do. And since there is no way to set your dive computer to a midpoint, the point is

moot. You could set the nitrox gas mix on your computer to a different mix than you were actually diving, but that brings up a bunch of dangers, including confusing the maximum operating depth of the gas you are actually using. So, in short, while it is theoretically possible to split the difference, I wouldn't recommend it. A savvy, experienced and knowledgeable diver could handle it, but that is probably moving beyond recreational diving, and putting you into the realm of technical diving.

NIGHT MOVES

You addressed safety as the focus of your article "How to Dive at Night Safely" (March/April), but I'd like to add the reasons for why we divers love night diving. For one, the critters behave differently, and some are not seen during the day. When taking pictures, the background is black, and against that background, your subject is stunning — the brilliant colors of the marine life are not degraded by distracting backgrounds. Just seeing things at night is amazing. — KEITH JENKIN, CANYON LAKE, CALIF.



WIN THIS

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COURTESY CRESSI. OPPOSITE: JON WHITTLE

A full-page photograph of a woman with blonde hair, smiling and looking to the side. She is wearing a black Thermalution Power Heated Undersuit. The background is a beach with waves and a blue sky with clouds.

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CURRENTS

NOTES, NEWS AND STUFF YOU CAN USE



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BACK TO THE FUTURE

BY ASHLEY ANNIN

The Mark V helmet defined an era for military and salvage divers, and now, on the centennial of the historic device, the U.S. Navy has developed a prototype that stands to revolutionize diving yet again. The innovative gadget is a full-face mask with a see-through head-up display that provides critical information to its ➤

SIMON DOWNHAM

wearer at eye level — even in zero-viz conditions. Think of it as a binocular Google Glass on steroids. The mask is still in the developmental stage, but four functioning models have already been built, and the technology will be used in dive helmets as well.

“It’s disruptive technology — a game-changer,” says Dennis Gallagher, project engineer for the Naval Surface Warfare Center Panama City Division’s Underwater Systems Development Branch. Essentially, these Navy masks will do to flip-down displays what Apple did to the flip phone.

Currently, military and commercial divers view information from imaging sonars, mapping systems and other devices using a flip-down binocular display attached to their mask or helmet. Gallagher says these systems “are game-changers in themselves,”

MARK V CENTENNIAL

Though the U.S. Navy Mark V helmet was not produced and distributed to military divers until 1917, the 2015 centennial celebrates the anniversary of the mask’s original design. The framework for the iconic helmet was designed by Navy gunner George D. Stillson, and was the standard for military and salvage divers for roughly 70 years, during which time its design was largely unchanged. Also, 2015 has been dubbed the Year of the Military Diver, as it marks the 35th anniversary of the U.S. Naval Diving and Salvage Training Center; the 70th anniversary of NSA Panama City and Naval Surface Warfare Center Panama City Division; and the 40th anniversary of the Navy Experimental Diving Unit’s move from the Washington Navy Yard to Panama City, Florida.

but the new masks will make the same information — and maybe more — available with a tap of the finger.

“Taking this technology to the next level and integrating its capability right into a dive mask or helmet means you’ve eliminated the need for a lot of different gauges and displays,” Gallagher says. “Everything you need — whether it’s decompression information, high-resolution sonar, mapping, compass navigation or encrypted text messages



The Navy’s full-face mask prototype will work like Google Glass for divers.

that are being sent to the diver — any kind of data information, visually, that the diver can make use of can theoretically be displayed in the mask.”

The head-up information display is transformative for military and public-safety divers, who require clear, visual access to information while working in zero visibility — what they call “diving by Braille.”

British and U.S. Navy divers have already tested the prototypes, and Gallagher says their reactions to the mask have been overwhelmingly positive.

Early prototypes of the HUD dive mask displayed black-and-white information in the form of letters and numbers, but Gallagher says the system currently in development can display full-color, high-resolution images — including 3-D augmented reality.

COURTESY ANTHONY BLEICHNER: OPPOSITE: COURTESY CONSERVATION INTERNATIONAL/ JULIUS THONAK (3)



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The newly elected president of Indonesia has pledged to seize, burn and sink any foreign fishing boats found in Indonesian waters. The president seems to be a man of his word: Pictured is the downing of a former Vietnamese fishing boat.

It will be two to three more years before the new see-through HUD masks and helmets are ready for military production, and technology transition to the commercial and recreational diving communities.

“Can you imagine getting in your time machine — or your TARDIS, if you’re a big *Doctor Who* fan — and being able to bring a diver forward and say, ‘Look what we can do now?’” says Gallagher.

SHOCK AND BURN INDONESIA SINKS ILLEGAL FISHING BOATS IN DRAMATIC FASHION

BY PATRICIA WUEST

Last December, Indonesia’s newly elected president, Joko Widodo, made a promise to the people of his country: His government would build more and better ports, and revamp the country’s fisheries industry. But Widodo also made

a more striking pledge: Any boats — sailing under the flag of any nation — found taking fish without permits in Indonesian waters would be seized, burned and sunk, an action permitted under a fishery law enacted in 2009. Photos of burning vessels circulating on the Internet in recent months prove that Widodo is a man of his word.

“Indonesia has been a major focus [of marine conservationists] for years, and

finally, the tide looks to be turning,” says investigative photojournalist Shawn Heinrichs. “If the progress continues, Indonesia could one day transform into a model for sanctuaries and marine enforcement.”

The exact number of vessels deliberately scuttled is not known; since December, the government reports that its navy has sunk dozens of fishing boats from neighboring countries. >>

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Photo by Stephen Frink



CE

But it's a challenge to account for all seized vessels in the vast island nation.

What is clear is that Widodo seeks to help the local fishing industry and to protect its marine resources; his government says illegal foreign fishing vessels cost local fishers as much as \$25 billion a year in lost catches.

Some conservationists view Widodo's aggressive stance as a sign that the Indonesian government will enforce a national law protecting all species of sharks and rays in its waters, but others are more cautious. "Indonesia spans a massive area of sea," says Heinrichs. "It is impossible to monitor each and every fishing boat and landing site. You have NGO patrol teams that have been doing a lot to protect Raja Ampat. Conservation International has led the charge in the north with a network of patrol teams, and Misool Eco Resort has a full-time patrol infrastructure in place in the south. You then have government enforcement capacity in the form of the regional water police and the navy and army, which are national. The overlap can be quite confusing at times."

Heinrichs says there's been progress protecting mantas and sharks, but there is still work to do: "The Indonesian government is realizing the value of protecting key marine species and areas, and mantas and Raja Ampat are at the top of that list. Opportunistic landings of mantas — either as bycatch or directed fisheries — will be an ongoing struggle. The top manta fisher in Indonesia is Lamakera, a community that is entrenched in manta hunting. Success with our community-transition project here will be the linchpin to massively reducing manta landings in Indonesia."

As word has spread in ➤➤

DIVE INTO THE SPACE AGE

PHOTO BY JONATHAN BIRD

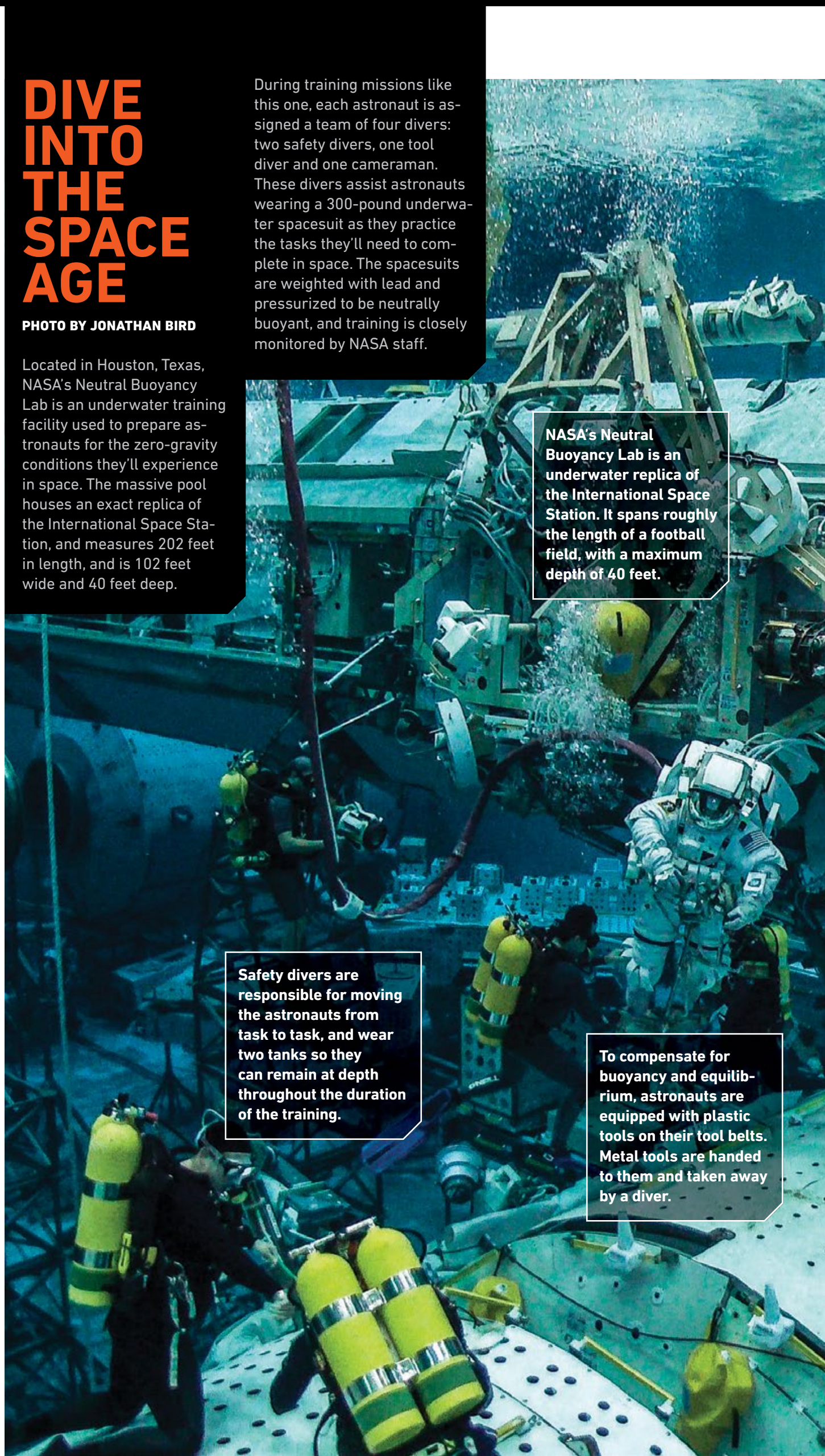
Located in Houston, Texas, NASA's Neutral Buoyancy Lab is an underwater training facility used to prepare astronauts for the zero-gravity conditions they'll experience in space. The massive pool houses an exact replica of the International Space Station, and measures 202 feet in length, and is 102 feet wide and 40 feet deep.

During training missions like this one, each astronaut is assigned a team of four divers: two safety divers, one tool diver and one cameraman. These divers assist astronauts wearing a 300-pound underwater spacesuit as they practice the tasks they'll need to complete in space. The spacesuits are weighted with lead and pressurized to be neutrally buoyant, and training is closely monitored by NASA staff.

NASA's Neutral Buoyancy Lab is an underwater replica of the International Space Station. It spans roughly the length of a football field, with a maximum depth of 40 feet.

Safety divers are responsible for moving the astronauts from task to task, and wear two tanks so they can remain at depth throughout the duration of the training.

To compensate for buoyancy and equilibrium, astronauts are equipped with plastic tools on their tool belts. Metal tools are handed to them and taken away by a diver.





Each astronaut is accompanied by two safety divers, who are prepared to swiftly remove the diver from the water in the event of a suit failure or other underwater crisis.

Divers equipped with float cams stream live underwater video of the astronauts to the NBL Test Room, where a team supervises the training session on 21 monitors.

the conservation community, some have criticized Widido's methods for achieving his goal. "The use of explosives to sink the boat disturbs and threatens the fish near the location of the explosion; in a way, it has the same effect as using dynamite to catch fish," Greenpeace activist Arifsyah Nasution told reporters covering one sinking.

But the rewards may be worth it. One unintentional benefit is many of the sunken boats will become dive sites. "Given the richness of these waters, these vessels will be covered in corals and

swarming with fish in no time," says Heinrichs. "We will work to develop new wreck dives in Indonesia, built around sunken illegal fishing vessels."

More important, Heinrichs is encouraged by Indonesia's recent commitment to marine conservation. "We have transformed the world's top fisher of manta rays into the world's largest manta sanctuary. Indonesia is also the world's largest fisher of sharks, and our aim is to address that next. Now that enforcement is coming online, the future for the sanctuary looks bright."

5 TIPS FOR DIVING WITH MARINE LIFE YOU'LL BE REWARDED FOR GOOD BEHAVIOR

BY TRAVIS MARSHALL

As divers, we have the privilege of swimming with beautiful and unusual marine life, but that privilege comes with the responsibility to respect them. Here are some tips that will help you to mind your manners.

1 KEEP YOUR HANDS TO YOURSELF Most creatures disappear fast if you try to touch them, while others like cone shells and sea

urchins pack a nasty sting. "Look but don't touch" is the philosophy to dive by.

2 DON'T FEED THE FISH

Fish feeding may seem like standard operating procedure on snorkel boats, but most divers consider it bad form — not to mention an eel or barracuda might mistake your finger for food.

3 PLAY HARD TO GET

Large animals like dolphins and sharks often approach divers out of curiosity. The key to getting these visitors to stick around is making calm, slow movements so they don't feel threatened.



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4 LEARN BODY LANGUAGE

Alternatively, a shark can sometimes get too curious or defensive toward divers in their space. Keep an eye on their body language: Hunched backs, pectoral fins pointing downward, and fast swimming with quick turns are all signs a shark is getting agitated.

5 WATCH YOUR FINS

Corals, sea fans and sponges are all living marine animals too, and inadvertently kicking them with your fins or crash-landing on them as you descend can cause irreparable damage.

CURRENTS

OCEAN ACTION

DIVE ON THE EDGE

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PROJECT "By living and working at the Little Cayman Research Centre, participants will experience life at an active marine research station," says Carrie Manfrino, president of Central Caribbean Marine Institute. Dive on the EDGE allows divers to explore reefs where endangered corals thrive — and is the first step in nurturing these delicate species throughout the Caribbean.

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2 ENGAGE

Coral conservation is an ongoing effort that will need support along the way. As the project develops, CCMI will share its progress and opportunities for involvement via Facebook — so "Liking" the page will keep conservation-savvy divers in the know. Since the project is new to 2015, sharing updates and information on your personal social-media accounts will help spread the word, and pave the way for more progress.

3 EDUCATE

Whether you're an educator, a diver or simply an advocate for coral conservation, CCMI has a number of opportunities to share its research and efforts with the public. Data collected through the Dive on the EDGE program will be shared during CCMI's weekly Reef Reports, and lesson plans on these data will be available for educators. This new information can be shared online, in a classroom or at a dive seminar.

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CURRENTS

QUICK LOOKS

SCUBALAB'S QUICK
GUIDE TO MUST-HAVE
DIVE GEAR
BY ROGER ROY

1 IKELITE VEGA DUAL LIGHTING KIT FOR GOPRO

Own a basic housed GoPro? It's time to up your game with Ikelite's Vega lights, tray, arms and configurable grips. The Vega lights pump a combined 4,400 lumens of light, allowing you to film everything from tiny blennies to massive whale sharks.

CONTACT: IKELITE.COM
MSRP: \$1,300

2 CRESSI NEWTON

You'll wear it as a wristwatch even when you're not in the water. But the Newton, with its mineral-glass display and reinforced casing, is more than a good-looking dive computer; it allows divers to select between two gas mixes while in the water.

CONTACT: CRESSIUSA.COM
MSRP: \$569.95

3 GENESIS SCUBA DRIFT

If you're a minimalist packer, you'll love Genesis Scuba's lightweight Drift BC. This jacket-style BC has two quick-release weight pouches, a back pad for comfort, and a sternum strap and cummerbund with a double-pull overstrap that helps you get a perfect fit.

CONTACT: GENESSCUBA.COM
MSRP: \$350

4 ULTRALIGHT CONTROL SYSTEMS YS ADAPTER

If you've been assembling your camera system like MacGyver, the YS adapter from ULCS lets you attach a light or strobe to your camera's hot or cold shoe, and provides a spot for a focus light for a camera that already has two strobes.

CONTACT: ULCS.COM
MSRP: \$18.95

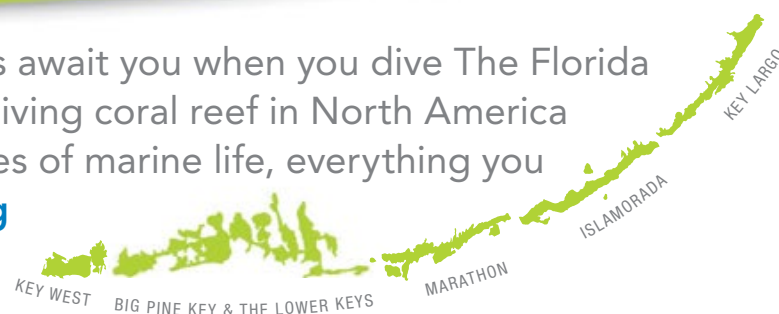




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ENCOUNTERS

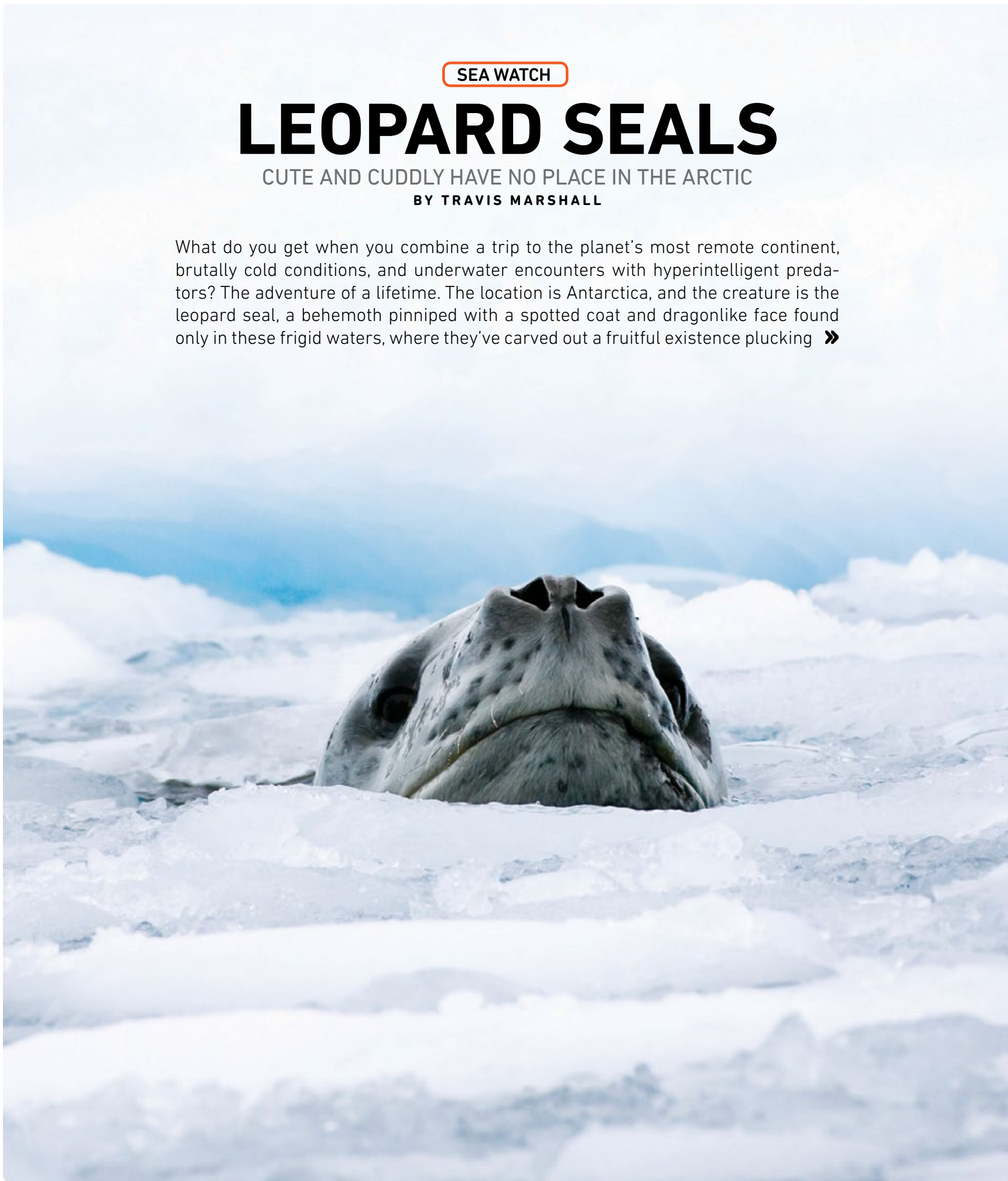
SEA WATCH

LEOPARD SEALS

CUTE AND CUDDLY HAVE NO PLACE IN THE ARCTIC

BY TRAVIS MARSHALL

What do you get when you combine a trip to the planet's most remote continent, brutally cold conditions, and underwater encounters with hyperintelligent predators? The adventure of a lifetime. The location is Antarctica, and the creature is the leopard seal, a behemoth pinniped with a spotted coat and dragonlike face found only in these frigid waters, where they've carved out a fruitful existence plucking »



BRYAN AND CHERRY ALEXANDER/NATUREPL.COM

FAST FACTS



penguins off the ice.

If you've ever been in the water with sea lions or harbor seals, forget everything you think you know about diving with these marine mammals. Not only are leopard seals twice the size of a harbor seal, they are also the only species that stalks and kills warm-blooded animals.

National Geographic photographer Paul Nicklen has famously recounted his experiences with leopard seals, including an expedition in 2006 during which a 13-foot female became his constant companion, even capturing, killing and offering penguins to his camera's dome port.

Leopard seals — said to

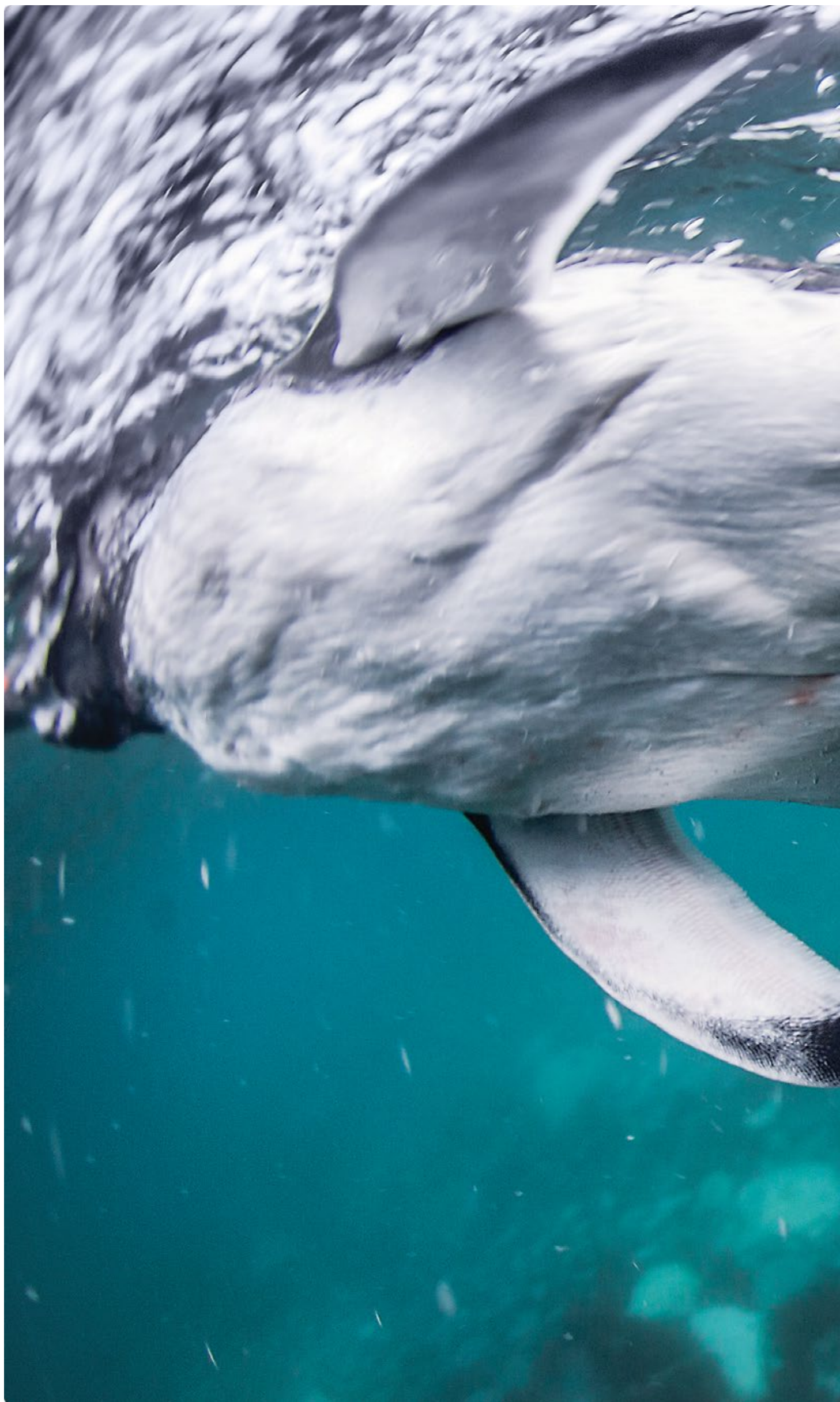
DANGER INDEX



be more leopard than seal — could undoubtedly turn a diver into chum with little effort, but there's been only one fatal attack recorded.

Today, Antarctic diving expeditions to encounter and photograph these creatures are led by local operators.

Under the guidance of marine experts, you'll learn the safest ways to interact before you slide into the water and come face to face with one of the most beguiling creatures in the sea.





SECRET SPOT

TOBIAS ENGE SHIPWRECK

The Baltic Sea is far from hospitable: Cold and gloomy, its murky waters are often subjected to storms that cause hazardous swells. Gogland island lies in the east of the hostile sea, and its cape provides some protection from the elements — though a number of ships rest on its seafloor. Underwater archeologists exploring the cape identified this fragmented shipwreck as the Russian Navy galiot *Tobias Enge*, which crashed near Gogland on a stormy night in 1771. Researchers believe the ship went down after a failed attempt to round the cape of the island, leaving no survivors of the 45-person crew.

TEXT AND PHOTO BY
VIKTOR LYAGUSHKIN





WHAT IT'S LIKE

TO SINK A 1,100- POUND STATUE

BY PATRICIA WUEST

I'm waiting at 60 feet with about 30 other divers while an 1,100-pound, 17-foot statue dangles above us. Divetech owner Jay Easterbrook and his crew grapple at the surface with the piece, trying to jockey it into position so it can be placed atop its 14,000-pound concrete pedestal, which the team placed yesterday — when it was downed, a concussive wave of sand and water knocked a safety diver backward 20 feet. I've come to Grand Cayman to witness the end of the statue's journey to its new location off the dock at Lighthouse Point Dive Resort.

Guardian of the Reef — a mythological creature that's half ancient warrior and half seahorse — has been 10 years in the making. It's traveled 4,552 miles, from a studio in British Columbia, Canada, to Grand Cayman. Its last land leg was an I-can't-look journey: strapped atop a truck, driven from Divetech's

Lighthouse Point location to George Town's harbor, lowered into the water, attached to heavy-duty lift bags, and then towed by a small boat back to Lighthouse Point. A circuitous route, but neither the concrete base nor bronze statue could be dragged out from the Lighthouse Point shallows.

The statue is floating horizontally, and the team is focused on getting it vertical. From below, it looks like a drunken frat-boy scene from *Animal House*. The statue's sculptor, Simon Morris, is in the water, and I think he's biting his nails.

The statue is lowered onto its base, and the team works to secure bolts.

Guardian, a symbol of Grand Cayman's commitment to conservation, now presides over a sand-bottom realm. Long may he reign.

**DIVE
DEEPER**
for more info, go
to scubadiving.com/guardian

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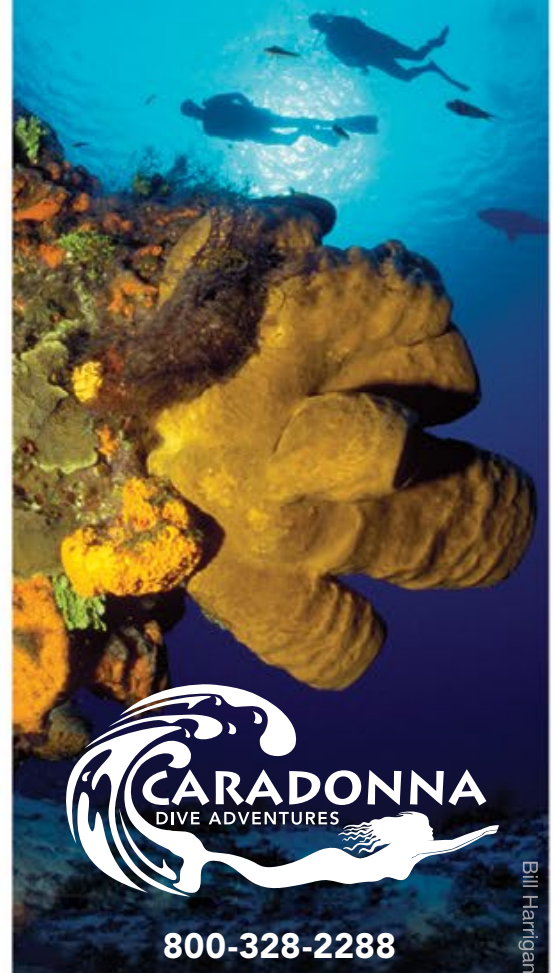
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Bill Harrigan

ILLUSTRATION: STEVEN P. HUGHES



LEGAL TRAVEL FOR U.S. CITIZENS



CUBA



Learn about Cuba's unique marine environment during an Oceans for Youth Foundation People-to-People educational program. Citizens of the U.S. will fly into Havana where they will spend a full day meeting with scientists about Cuba's marine parks. After two nights in Havana, transportation is provided to the southern town of Jucaro, where the *Jardines Aggressor* liveaboard docks. Guests will depart for six days of scuba diving in the Gardens of the Queen (Jardines de la Reina) National Park, located 60 miles off the southern coast. Biologists will hosts discussions and presentations covering many topics including: proper mooring procedures and installations, fish tagging, commercial fishing, boat pollution and more.

The *Jardines Aggressor* liveaboard is a floating resort with deluxe accommodations, onboard chef, professional crew and state-of-the-art diving amenities.

Join an Oceans for Youth Foundation People-to-People educational tour and learn about the many treasures in this Caribbean paradise, Cuba!



- Cuba Travel Program
Nine-nights, Thursday to Saturday
- Two hotel nights in Havana
 - Transportation to Jucaro
 - Seven nights aboard the *Jardines Aggressor*
 - Program with scientists in Havana and Gardens of the Queen Marine Park



Oceans For Youth Foundation is licensed by the U.S. Treasury Department for educational programs to Cuba and all activities are in full compliance with U.S. Treasury regulations. Under the U.S. economic embargo of Cuba, travel to Cuba by U.S. citizens for tourism is prohibited, however, licensed "people-to-people" educational visits are permitted.



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GET YOUR KICKS

HOW WE TEST

MANEUVERABILITY
The ease of getting in and out of tight places — such as backing up, spinning or reversing directions — using fin movements.

FULL-FOOT FINS



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» For more on ScubaLab testing, go to scubadivingq.com.

AQUA LUNG

STRATOS 3

PRICE \$80 CONTACT aqualung.com
LENGTH 26½ inches in size 9.5 to 10.5

The Stratos 3 has beefy side rails that pivot near the front of the foot pocket to get the whole blade into the action. Test divers found it an effective design, rating it very good for power versus stress, and for efficiency in the flutter kick. The six available sizes were able to comfortably fit almost all of our test divers. The toe opening is roomy and well shaped, and surrounded by soft material. The finger grip on the heel is small but soft enough to grip firmly. The Stratos 3 made it onto multiple divers' top-three favorites list, and is our Testers Choice for this category.

POWER VS. STRESS

POOR EXCELLENT

ACCELERATION

POOR **EXCELLENT**

○○○○○○○○○○●●●●○○○○○○○○○○



Barefoot Comfort

No matter how great its design, you won't really like your non-adjustable full-foot fins unless the fit is nearly perfect. So take the time to try on every available size to find one that's just right for you.

BODY GLOVE

VAPOR

PRICE \$49.99 **CONTACT** bodyglove.com
LENGTH 22 inches in size large to extra large

The Vapor is adjustable but worn on bare feet, and that combined with its compact size prompted more than one test diver to ask if it was a “snorkel fin.” They didn’t mean it as a compliment. But in the water, the Vapor proved quite effective. The Vapor tied the top score for maneuverability, and racked up good scores for power versus stress, for surface swimming, and for all kicking styles except frog kick, where divers rated it just fair. It also made its way onto more than one diver’s top-three list. What hurt the Vapor was its two sizes: one for 4.5 to 8.5 and one for 9 to 13, which didn’t fit all our divers. But if the fin fits, the Vapor’s compact size, effective blade and attractive price make it a travel companion to consider.

POWER VS. STRESS

[illegible]

ACCELERATION

ACCELERATION

POOR **EXCELLENT**

Score Range	Description
1-10	POOR
11-20	EXCELLENT



“Surprisingly powerful for its light weight.”

MARES
WAVE

PRICE \$52 CONTACT mares.com
LENGTH 24¾ inches in size 9 to 10

The full-foot version of the Wave has a distinctive large, soft-rubber pocket nearly as wide as the blade, suspended between ribs of stiffer thermoplastic material that extend to the side rails. The lightest fin in our test, the Wave weighed just 1 pound 6 ounces in size 9 to 10. Test divers found it stable and efficient. It tied the high scores for power versus stress, acceleration, and efficiency in the flutter kick, and was rated good in all other kicking styles and for maneuverability. With six sizes, it fit our test divers as well as any full-foot fin, which is to say some wished it was a little wider, or narrower, etc. A competent, comfortable fin for warm water, the Wave is also very attractively priced.

POWER VS. STRESS

POWER VOLTAGE

POOR **EXCELLENT**

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ● ● ● ● ○ ○ ○ ○ ○ ○ ○ ○

ACCELERATION

POOR **EXCELLENT**

○○○○○○○○○○○○○○○○○●●●●○○○○○○○○



“
Good
speed/
power
in flutter
kick.”

DIVE DEEPER

For more info, go to scubadiving.com/fintest.

RK3

PRICE \$160 CONTACT aqualung.com
LENGTH 19 inches in size medium

The RK3 is the latest iteration of the venerable Rocket fin that has been around since, well, before we can remember. The RK3 has the familiar all-rubber construction and vented blades, but now comes with a stainless spring strap that test divers really liked, winning very good scores for fit and comfort, and for ease of donning. Not surprisingly, given the RK3's modest dimensions, divers praised its ability to spin on a dime. It also racked up very good scores for efficiency in a flutter kick. It earned good scores for acceleration, but some divers noted that, for them, the fin's best performance came from a moderate level of effort, with the payoff dropping when they kicked in the afterburners.

POWER VS. STRESS

[illegible]

ACCELERATION

POOR **EXCELLENT**

Response	Count
POOR	10
EXCELLENT	10



“
Good
for tight
spaces.”

CRESSI

ARA EBS HARD BLADE

PRICE \$169.95 **CONTACT** cressiusa.com
LENGTH 26½ inches in size medium to large

Geared toward cold-water divers, the ARA has roomier foot pockets to fit drysuit boots. We were only able to get the new ARA in one size, so we don't know how different the sizing actually is. But results from test divers who could wear the ARA suggest its appeal goes beyond just cold water; it tied for top overall score among conventional paddle fins. The EBS ("elastic bungee system") is now standard on several Cressi fins (and can be retrofitted to others). The EBS was a hit with test divers, who rated the ARA very good for fit and comfort and for ease of donning and removing. The Hard Blade option we tried (there's also a Soft Blade) was rated very good for flutter kick and good for other styles.

POWER VS. STRESS

[illegible]

ACCELERATION

ACCELERATION

POOR **EXCELLENT**

Country	Acceleration Score
1	1.0
2	1.0
3	1.0
4	1.0
5	1.0
6	1.0
7	1.0
8	1.0
9	1.0
10	1.0
11	1.0
12	1.0
13	1.0
14	1.0
15	1.0
16	1.0
17	1.0
18	1.0
19	1.0
20	1.0



“
Super
easy
on/off.”

Old Is the New New

Nearly half of the fins we tested this year have strong design or material elements of classic fins — some going back decades. Our testing suggested that most divers are more concerned about performance (and some of those classic designs and materials performed very well) than whether a fin is old-fashioned or “funny” looking. In any case, as one diver noted, when they’re on your own feet, you don’t really see what they look like anyway.

NEW STRAPS



NEW MATERIAL



There used to be scuba fins that we described as “full-foot” that slipped onto your bare feet with a stretch fit and had no adjustment, and fins we called “open-heel” that went over dive boots and had adjustable straps. You’ll notice our test crop this year included a pair of adjustable fins for bare feet, while half of the open-heel fins we tested had nonadjustable spring or bungee straps. While these newfangled design elements complicated our open-heel and full-foot category groupings, we view the new designs as a good thing — the in-water result has been less fuss and better comfort.



Two ways engineers boost efficiency in fins are with angled vents, something like louvers, and with channels of soft material in the blade to trap scoops of water — both designed to redirect water for increased thrust.

The XT is another fin that had us asking, “Have we met before?” And with good reason, because while the XT has a new (and very good) stainless buckle system, it retains a familiar shape and the monoprene blend used for more than 20 years. That blend makes the XT firm but with a lively action that provides plenty of drive. The XT tied the high score for power versus stress, and got the highest score for efficiency in the frog kick. It also tied for high score for stability, thanks to that new spring strap. Some found the XT a little too firm for their kicking styles. But divers who dig stiffer fins with some oomph loved the XT, and no fin earned more votes on divers’ lists of their top-three favorites.



“Lots of power — you really feel like you’re moving.”

If you want 10 opinions, just ask 10 divers. The Wave finished with an overall good score, but individual divers differed more than the final scores suggest. The Wave has a comfortable foot pocket and a blade that forms a large channel. Divers who scored the Wave highest noted its comfort and easy performance in any kicking style. Divers who scored it lower thought it was too soft, without enough muscle in the blade. Divers were also split on the buckles, which open to create slack for donning or doffing; some found them fussy, while others thought they were terrific. What divers did agree on was that the Wave is a stable, comfortable fin for those who like plenty of flex in the blade.



“Really comfortable foot pocket.”

PRICE \$199 CONTACT scubapro.com
LENGTH 23¾ inches in size medium

The original Nova was our Testers Choice in 2010, and the full-foot Nova repeated the feat in 2013. Beyond the vibrant new colors, there are lots of updates to the fin's design. These include tapering edges of the blade to improve performance in alternate kicking styles. We also noted that the notches on the bottom of the beam hinges are reshaped, and the tabs between them are more flexible, possibly to prevent breakage (a complaint we have heard, but haven't experienced in testing or use). Test divers gave the Nova high or tying high scores for fit and comfort, power versus stress, flutter kick, donning and doffing, and multiple selections as favorite fin. The Seawing Nova is our Testers Choice in this category.

POWER VOICESTRESS

POOR **EXCELLENT**

○○○○○○○○○○○○○○○○○○○○●●●●●○○○○○○○○○○

ACCELERATION

POOR **EXCELLENT**

Country	Acceleration Score (0-100)
Algeria	10
Angola	15
Argentina	20
Australia	25
Austria	30
Bahamas	35
Bangladesh	40
Barbados	45
Belgium	50
Belize	55
Bolivia	60
Brazil	65
Bulgaria	70
Canada	75
Chad	80
China	85
Colombia	90
Costa Rica	95
Croatia	100



“Good acceleration and power.”



A few years ago manufacturers were rushing to meet the demand for split fins, but it seems the trend has peaked; we haven't had a new split fin submitted for ScubaLab testing since 2012. On the other hand, we still see plenty of splits when we're diving — and know divers who swear by theirs — and many manufacturers still offer them in their lineups.

PRICE \$145 with standard strap (spring strap optional)
CONTACT sherwoodscuba.com **LENGTH** 24³/₄ inches

While the Triton was one of four vented fins in our test, a closer look quickly shows that it's really more a mix of classic and contemporary design. It's almost 6 inches longer than any of the other vented designs and is made of a thermoplastic that's quite light, making it nearly a pound per fin lighter than the heaviest model. The material has flex but with a decent snap (the Triton was one of the few fins that wasn't rapped by any testers as too flexible or too stiff). The Triton finished our test with one of the top combined scores, tied the highest scores for stability and acceleration, was rated best for surface swimming (thanks to its light weight), and multiple divers put it on their lists of top-three fins of the test.

[illegible]

POOR **EXCELLENT**

Category	Count
Very poor	18
Poor	15
Average	12
Good	8
Excellent	5



“Easy surface swimmer.”



TUSA
SOLLA

PRICE \$119 CONTACT tusa.com
LENGTH 24½ inches in size medium

The Solla is made of a thermoplastic elastomer with a mix of hard and soft materials in the blade, the foot pocket and the side rails. The very noticeable stiff-to-flexible gradient in the blade gave the Solla good drive without taxing leg muscles. Most divers also liked the anatomic heel strap, which has an arched section in the middle (and a generous finger slot that earned very good scores for donning and doffing), although a couple of divers with thin boots found the strap design a little tight on their heels. The Solla's modest size also made it quite maneuverable. A very capable open-heel fin that does everything well — and at a friendly price — the Tusa Solla is our Best Buy.

POWER VS STRESS

POOR



EXCELLENT

ACCELERATION

POOR



EXCELLENT

“Easy to maneuver – good power.”



XS SCUBA TURTLE

PRICE \$210 (spring straps); \$140 (rubber straps)
CONTACT xsscuba.com **LENGTH** 19 inches in size extra large

We tried — unsuccessfully — to resist a tortoise versus hare reference here. But the venerable Turtle (albeit with upgrades) surprised us with its performance. Call the Turtle old-fashioned, but it earned a tie for top overall score. It was the only fin to get top scores for two kicking styles (flutter and dolphin), and it tied the top score for acceleration. It was hurt by odd sizing, which kept a third of our test divers from using it (the sizes run from XL, which is like large, to 3XL, which will fit Sasquatch's drysuit boots). The new spring strap is secure and has a solid finger grip that won't get tangled but isn't that easy to grasp. The moral of this story is, don't laugh at Grandpa's fins until you try them.

POWER VS STRESS

POOR



EXCELLENT

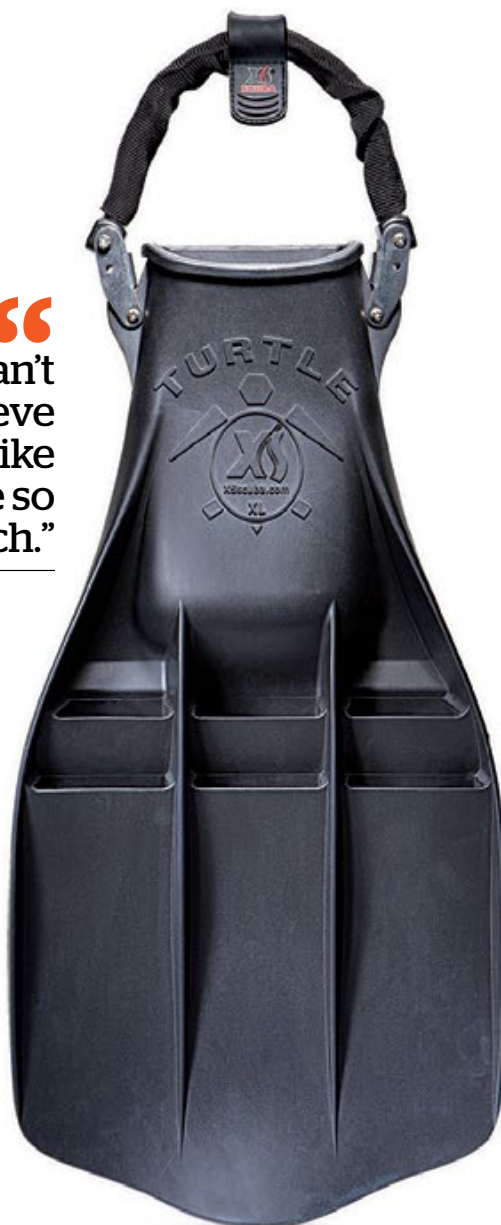
ACCELERATION

POOR



EXCELLENT

“Can’t believe I like these so much.”



How to Care for Your Fins

Now that you've found your sole-mates, keep them in tip-top condition with these tips.

STASH THEM OUT OF THE SUN when

they're not being used. Exposure to heat and sunlight can cause premature cracking and discoloration, and can also weaken the bonds between composite materials.

KEEP BLADES,
buckle assemblies
and straps clean.

ALWAYS STORE FINS
FLAT, otherwise you could end up with a permanent bend or crease in the blade, which could hinder its in-water performance.

NEW FINS USUALLY COME WITH FOOT-POCKET INSERTS — make sure you don't throw them away. Storing your fins with the inserts in place will help maintain the shape of the fin's foot pocket when you're not diving — kind of like using a shoe tree for your street shoes.



No Two Blades Alike

A glance at these fins shows the diversity of designs from engineers all trying to solve the same problem: how to efficiently convert the back-and-forth motion of our legs into forward thrust in the water.



TRAVEL
ROUNDUP

UNITED STATES

B-SIDE WRECKS

MANY HEADLINER WRECKS HAVE A
NEARBY OPENING ACT YOU SHOULD
GET TO KNOW BETTER

BY BROOKE MORTON

You can crisscross the country, diving for a week or for a day, and your buddies will have only one question: Which one was the biggest, deepest, hairiest wreck? We're guilty too. We set our eyes on the biggest prize, sometimes overlooking the attraction that's right next door — and it just might be that secondary wreck that deserves top billing.

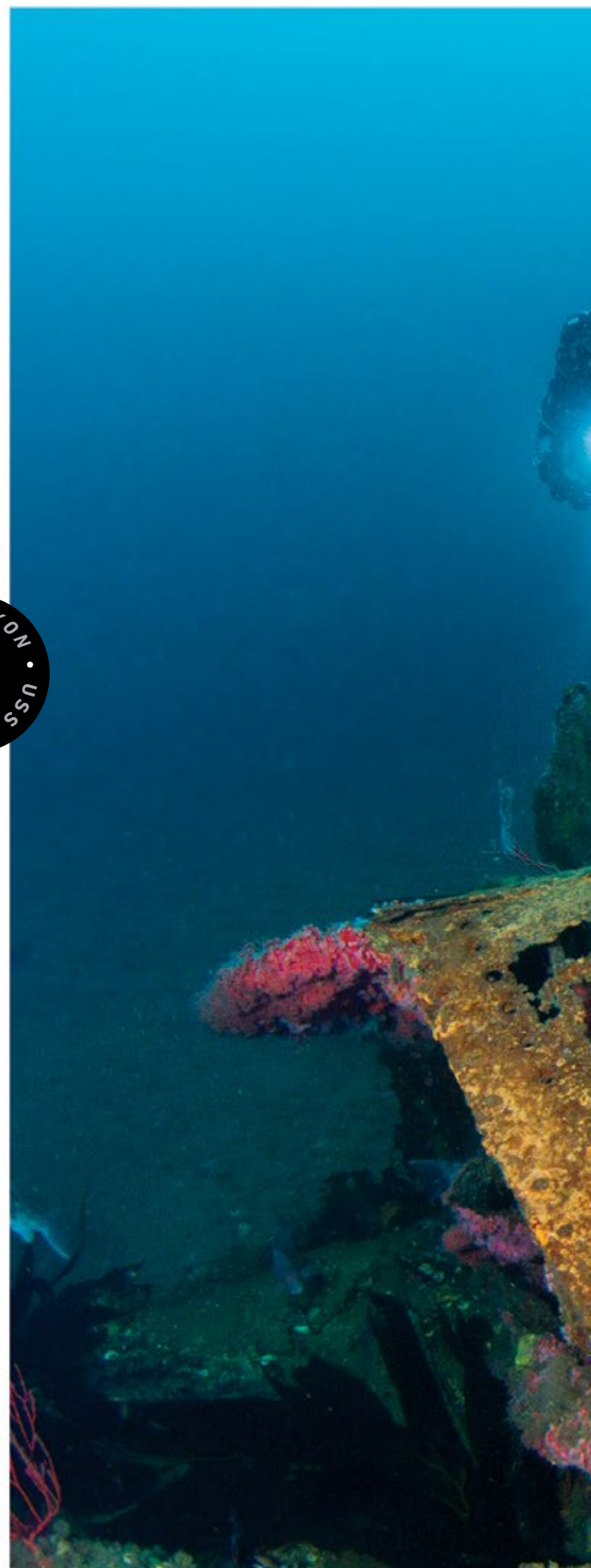


Wrecks like the Vought
F4U Corsair in Oahu, Ha-
waii, have become sunk-
en-metal playgrounds
for divers in the U.S.



USS HOGAN

“BECAUSE OF THE CONDITIONS, MANY OPERATORS OFFER IT AS A DRIFT OR ‘LIVE’ DIVE, KEEPING THE BOAT’S ENGINE RUNNING WHILE GUESTS ARE DOWN.”



HMCS YUKON



366 FEET

CALIFORNIA

“Hundreds and hundreds of people spent thousands and thousands of hours prepping the wreck,” says Eric Mycroft, captain at *Lois Ann Dive Charter*, of the *Yukon*, a 366-foot destroyer purpose-sunk in 2000. “The size of the ship is a big deal,” says Mycroft, adding that it’s ideal for bettering any diver’s skills because it offers **SO MANY ROOMS AND LEVELS TO PENETRATE — NEARLY THE ENTIRE INTERIOR IS ACCESSIBLE**. The most popular penetration corridor, nicknamed Burma Road, runs from bow to stern, a distance longer than most divers can swim in one dive. Fortunately, the team that readied the ship for sinking placed cutouts every 10 feet, providing points for exiting or turning around. Adds Mycroft, “Really, only the boiler room is blocked off because they couldn’t make it safe — otherwise, pretty much everything else is in play.” loisann.com





8 USS HOGAN // // 314 FEET

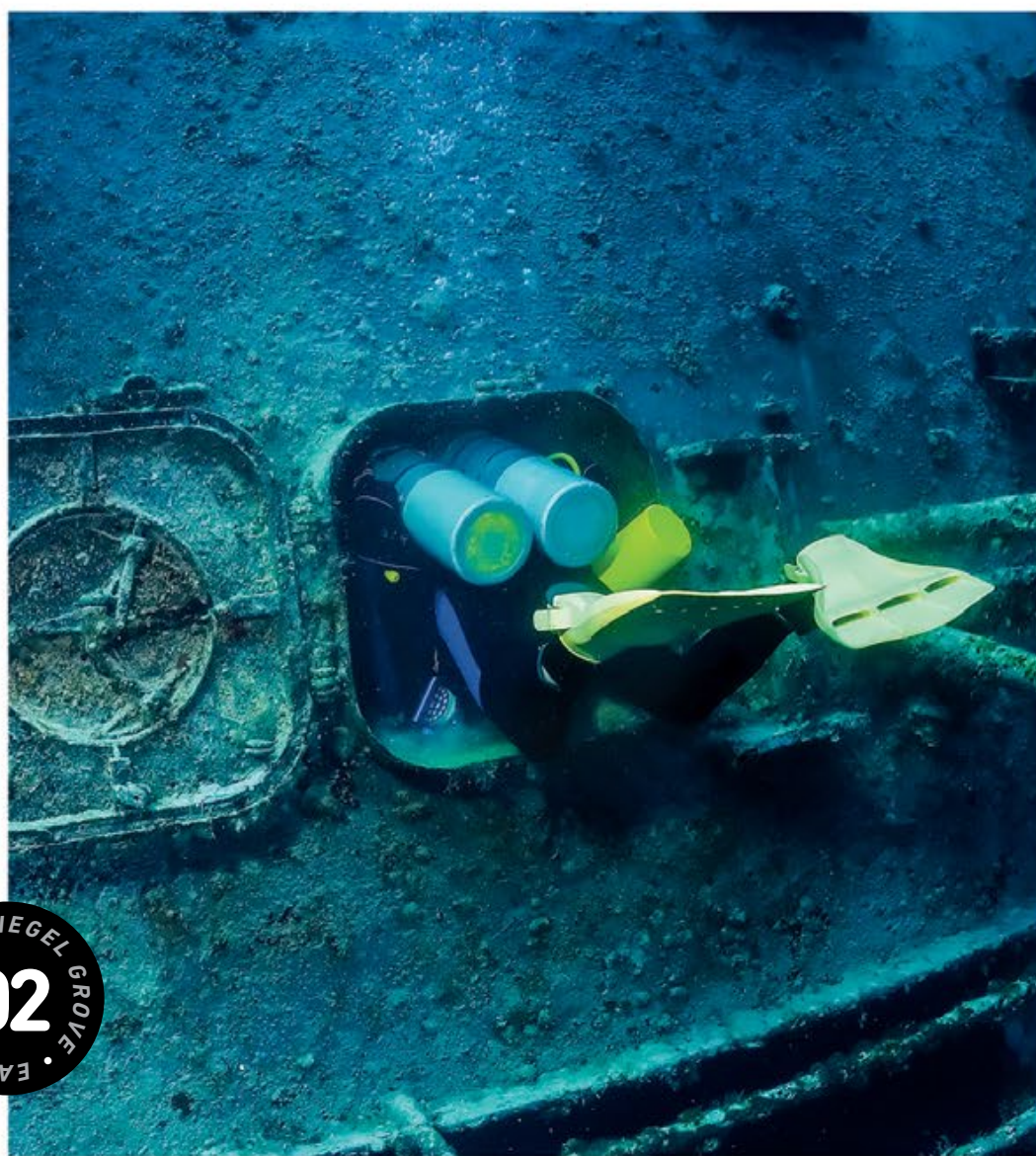
"The *Hogan* can be your best day of diving or your worst," says Mycroft of the 314-foot destroyer sunk in 1945 for torpedo practice. It lies 90 minutes south of San Diego — near the Mexican border — in sand roughly 125 feet below the surface. **"IT'S A HARDER DIVE, MORE EXPENSIVE AND REQUIRES MORE TRAINING,"** adds Mycroft. Because it's been down longer than the *Yukon*, it boasts much more sea life, like 4-foot lingcod. "Even the crevices of the ship are beautiful and packed with life," he says. The currents pushing past the site help critters flourish but can also wreak havoc on divers. "Viz can go from 70 feet to 3 feet in the snap of your fingers." Because of the conditions, many operators offer it as a drift or "live" dive, keeping the boat's engine running while guests are down. It all adds up to a challenge best suited to experienced divers. Says Mycroft, "If you want an easy, solid trip, you dive the *Yukon*, but if you want an adventure, you choose the *Hogan*." loisann.com

USS SPIEGEL GROVE



510 FEET

"The *Spiegel* has notoriety," says Dan Dawson, owner of Horizon Divers in Key Largo, Florida. During its 2002 sinking, "it went down early, and a hurricane flipped it in 2005 — that's newsworthy stuff that got noticed worldwide," he says of why the Navy landing ship remains the Upper Keys' most popular wreck. Plus, at 510 feet, its sheer size promises bragging rights, as does the amount of penetrable real estate. Says Dawson, **"IF YOU ARE ADVANCED WRECK TRAINED, YOU CAN SPEND AN HOUR INSIDE."** Divers can swim past the galley's ovens, sinks and stoves, plus the mess hall, engine rooms, pump rooms, living quarters and brig. Purpose-sunk, the wreck's superstructure offers many exits, and thus ambient light. It's the kind of ship that gives more and more to those who log time exploring it. "At 85 feet, Snoopy riding an alligator is painted on the floor," says Dawson. "When people hear about that, they always want to see it." horizondivers.com



USS SPIEGEL GROVE

"IT WENT DOWN EARLY, AND A
**HURRICANE FLIPPED
IT IN 2005 —**
THAT'S NEWSWORTHY STUFF THAT
GOT NOTICED WORLDWIDE."

WRECKS

ABROAD

ST. CROIX, USVI

| Five wrecks occupy Butler Bay on the west shore of St. Croix. The deepest is the 177-foot *Rosa Maria*, popular for a swim-through between its prop and hull, and the turtles attracted to its wheelhouse. Of the shallower wrecks, the 144-foot *Suffolk Maid* is most prized.

GUAM | Here you can simultaneously lay one hand on WWII's *Tokai Maru* and another on SMS *Cormoran II*, scuttled in 1917 during World War I. Also in Apra Harbor is the *Kitsugawa Maru* freighter, upright at 160 feet.

NORTHERN MARIANAS ISLANDS

| On June 23, 1944, the USS *Yorktown* torpedoed the 400-foot Japanese freighter *Shoun Maru* off Terunon Village, Rota. It sits in 70 to 100 feet of water with an exposed cargo of trucks, bicycles and bathtubs. Off the neighboring island of Saipan lies a Boeing B-29 in 30 feet of water.



B *EAGLE*



2 8 7 F E E T

"Personally, I like the *Eagle* better than the *Spiegel* because it's smaller," says Eric Billips, owner of Islamorada Dive Center. "On the *Spiegel*, I might hang at the bow or the cranes, and that's the entire dive — and there's 95 percent more wreck, so it takes a week to get a feel for its layout." The 287-foot *Eagle*, although not a secret spot by a long shot, is known for the fact that it was sunk in 1985 along with three other ships in the Keys. It's largely accessible to divers given its maximum depth of 115 feet, and that it's severed in two, courtesy of 1998's Hurricane Georges. Billips' favorite routes lead through the ship's stern. **FOR MORE-ADVENTUROUS DIVERS, HE RECOMMENDS THE MESS HALL AND MACHINE SHOP.** Says Billips, "The *Eagle*'s a more intimate experience because in one dive, you can do the whole ship." islamoradadivecenter.com

FLORIDA KEYS



TRAVEL ROUNDUP

FROM LEFT: JOSEPH DOVALA/SEAPICS.COM; AMAR AND ISABELLE GUILLEN/SEAPICS.COM

USS YO-257

B



VOUGHT F4U CORSAIR

1 6 5 F E E T



3 4 F E E T



This two-for-one site is famous because it's easy to reach, **JUST 10 MINUTES FROM THE KEWALO BASIN, JUST OUTSIDE WAIKIKI, OAHU.** Alongside the Navy oiler ship that served in World War II, the Korean War and the Vietnam War lies the *San Pedro*, a former Korean fishing boat. Both ships, lying roughly 40 feet apart at a depth of 85 feet, were sunk by the Atlantis Submarines Hawaii. The tour company pilots its yellow vessels overtop the wrecks, making several passes. "People are looking through the porthole, waving and taking pictures — divers usually get a kick out of that," says Lewis Heuermann, master instructor at Island Divers Hawaii. As for the wreck itself, the most fun is inside the cargo holds. "You can cross from one side of the ship to the other in the large cargo bays, swimming figure eights." oahuscubadiving.com

"It has real wreck appeal," says Heuermann of the authenticity of the Corsair, whose pilot was forced to ditch the plane in 1948 when a fuel gauge failed. It's still intact, on its belly in sand at 115 feet. The cockpit's stick, rudder pedals and seat remain. "It pulls you back to that time when our nation was at war," says Heuermann. Beyond the WWII connection, the site gives the chance to witness actual flybys. "The Corsair sits on a ledge in a blue channel," he says. **"WHEN YOU DIVE IT, YOU FACE THE ABYSS."** He's seen a lot of sharks at the site, plus mantas and other pelagics. "In the winter, if you're lucky, you could get a whale." oahuscubadiving.com

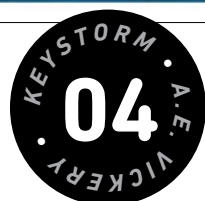


VOUGHT F4U CORSAIR

**"IT PULLS YOU
BACK TO
THAT TIME
WHEN OUR NATION
WAS AT WAR."**

HAWAII





KEYSTORM



2 5 6 F E E T

"You can actually see the hole where the *Keystorm* hit the Scotch Island Shoal,"



8

A.E. VICKERY



1 4 0 F E E T

"The *Vickery* would be nothing in sea water — but fresh water preserves these hundreds-of-years-old wrecks," says Rothschild. The 140-foot three-masted wooden schooner was built in 1861 and sank 28 years later, upright and intact

NEW YORK



in the St. Lawrence Seaway just beyond Lake Ontario's north-eastern point. **"IT'S STILL GOT A LOT OF LIFE — IT LOOKS LIKE A PIRATE SHIP,"** he says. *Vickery's* stern juts off a submerged shelf, sticking straight into the shipping channel. A highlight for divers is dropping out and below the wreck's backside to peer up at the ship and its rudder. Another noteworthy feature must be viewed from inside the hull. "Sunlight filters in between the planks, down through the open deck for a pretty effect," says Rothschild. islanddiver.ca



TRAVEL ROUNDUP



"Anyone who gets their hands on a guide to Great Lakes wrecks gets excited about the *Prins Willem*," says Greg Such, owner of Shipwreck Adventures, a dive operator based in the Wisconsin town of Two Rivers, a 90-minute drive north of Milwaukee. **THE 254-FOOT INTACT FREIGHTER IS THE AREA'S MOST POPULAR WRECK**, 4 miles offshore and 45 feet deep. Of the 10 rooms and three ship levels divers can penetrate, Such's favorite inside passage starts near a skylight in the engine room and exits near a bulkhead crack. "The engine is enormous, and there's a glow from the skylights behind you." Divers can also reach the wheelhouse and crew quarters, and peer into the galley. Because the ship is so intact, shallow and penetration safe, it ranks high for access — which Such credits for its popularity: "For people to enjoy something, they have to be able to reach it." 920-482-0725

GET TECHNICAL

BRING YOUR WRECK-DIVING CRED
TO THESE SITES BEYOND REC LIMITS

COMET | **Location:** Lake Superior off Whitefish Point on Michigan's Upper Peninsula | **Depth:** 200 to 230 feet | A hazardous tangle of timbers and cables, plus poor visibility and unpredictable currents, await divers exploring this 181-foot wooden-hulled steamship, launched in 1857. A workhorse on Lake Superior, *Comet* was carrying 70 tons of Montana silver ore when it sank on Aug. 26, 1875, after being rammed by the Canadian sidewheeler *Manitoba*. | **Go Now:** abyssdivecharters.com

NAECO | **Location:** The ship sits in three pieces, with the stern and bow about a mile apart roughly 38 nautical miles due south of Morehead City, North Carolina | **Depth:** 90 (stern) to 140 feet (bow) | Depth on the deeper bow section makes this a dive for experienced wreck divers; the stern is at a more rec friendly 90 feet. On March 23, 1942, the 411-foot *Naeco* was torpedoed by the *U-124* doing World War II. While the bow is deep, the Gulf Stream keeps the water invitingly clear and warm — though divers should expect mild to moderate currents. | **Go Now:** olympusdiving.com

ANDREA DORIA | **Location:** 60 miles off Nantucket Island | **Depth:** 250 feet | Soon after its maiden voyage in 1953, the 697-foot luxury liner *Andrea Doria* was making headlines. Three years later, *Doria* collided with *Stockholm* in heavy fog. It is no longer safe to penetrate this deteriorating ship, and only a few divers can test their mettle in dark, cold water, ever-shifting ocean currents and depths reaching 250 feet. | **Go Now:** njscuba.net



B SS MILWAUKEE



"People dive the *Prins Willem*, and then they want more," says Such. The *Milwaukee* is just that: bigger and deeper. The 338-foot train ferry, 8.5 miles from the Milwaukee harbor, lies between 90 and 128 feet of water. **"IT INTIMIDATES PEOPLE THAT IT'S ON THE EDGE OF RECREATIONAL LIMITS,"** he adds. The ship's interior is less intact, and less accessible overall than the *Prins Willem* due to somewhat collapsed upper cabins, but divers can penetrate the boiler room, crew's quarters and the deck where the train cars lie in storage. The easiest interior swims are in the forecabin. But be warned: Even just exploring the exterior can push limits. "It's swimmable, but to do it all at once is easier as a technical dive," says Such. "Or do what I do: Ride a DPV." 920-482-0725



PRINS WILLEM V. • SS MILWAUKEE •
05

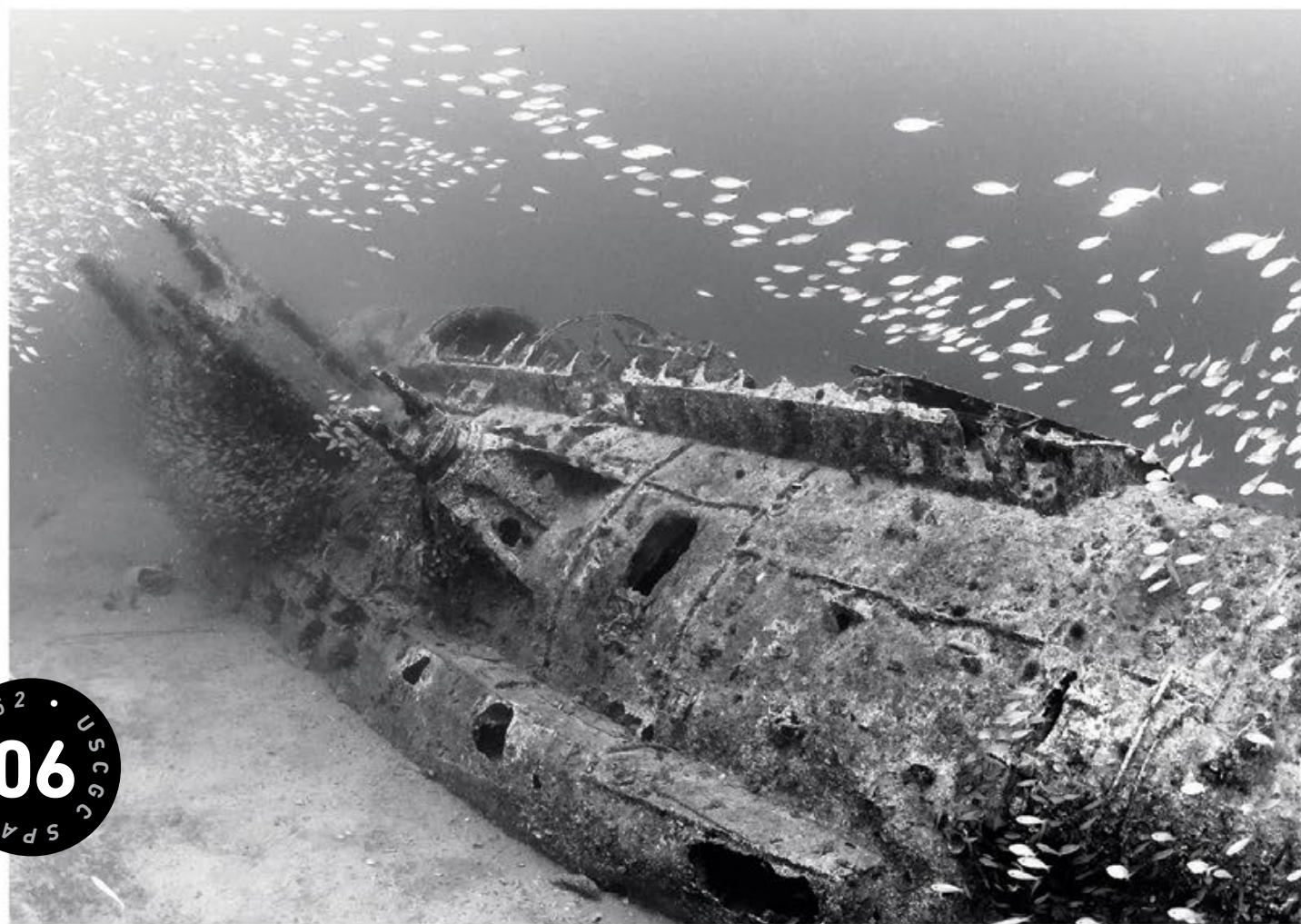
 TRAVEL ROUNDUP

U-352



218 FEET

"The intrigue comes from the stories and mystery surrounding the *U-352*," says Jay Mead of Discovery Diving, a scuba operator in Beaufort, North Carolina. Sunk in 1942, the submarine remains **THE AREA'S MOST REQUESTED WRECK LARGELY BECAUSE OF ITS INVOLVEMENT IN FAMOUS CAT-AND-MOUSE HUNTS**. Depth charges forced the sub to surface, and Mead says, "the Coast Guard really didn't know how to react to a prisoner situation — they had no instructions from anybody." They shot and injured a few Germans in the water before collecting the surrendering men. Now the 218-foot, relatively intact structure gives divers the chance to see a conning tower and torpedo hatches, and honor a war grave. Says Mead, "For some, it fills a square, like going to a Civil War fort, but for others, it creates a real attachment." *discoverydiving.com*



USCGC SPAR

"I'VE BEEN
WITHIN
INCHES OF A
**10-FOOT
SAND
TIGER**
WEIGHING
350 POUNDS."

WRECKS WITH A PAST

SOMETIMES A MILITARY ATTACK OR MOTHER NATURE DOOMS A SHIP

USS ARIZONA | **Location:** Pearl Harbor, Hawaii | **Depth:** 170 feet | It was Sunday morning when Japanese naval forces bombed the *USS Arizona*, bringing the warship and 1,177 crew members to their final resting place. The date was Dec. 7, 1941. Though diving isn't permitted, a memorial built above the war grave honors those who lost their lives. | **Go Now:** nps.gov

W.E. HUTTON (AKA PAPOOSE) | **Location:** North Carolina | **Depth:** 65 to 70 feet | The 435-foot *Hutton* was transporting fuel from Texas to Pennsylvania when it was struck by a torpedo during WWII. The U.S. Navy originally thought it was the *Papoose*; even after being identified as the *Hutton*, the incorrect name stuck. | **Go Now:** olymposdiving.com

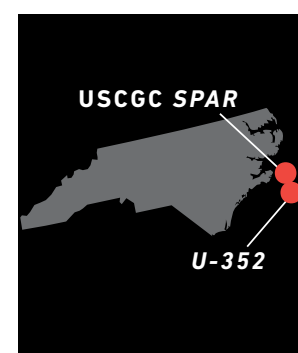
ALEXANDER NIMICK | **Location:** Lake Superior, Michigan | **Depth:** 15 to 20 feet | Among the wrecks at the bottom of Lake Superior is the American cargo ship *Alexander Nimick*. Stranded on a sandbar near the mouth of the Two Hearted River, the 100-foot *Nimick* was pummeled by heavy seas on Sept. 21, 1907 — killing six of its crew. **Go Now:** shipwreckexplorers.com



"Pardon my French, but it's a holy-sh*t moment." Mead is describing the inevitable on the *Spar*: encountering a snaggle-toothed sand tiger shark. "I've been within inches of a 10-foot sand tiger weighing 350 pounds," he says. "Sometimes there are so many on the wreck, you can't see through the lot of them." Those who penetrate will also find them inside. Outside, the mix of warm and cold currents attracts other shark species, including the occasional great white. **"WHEN THAT HAPPENS, WE SEND A NOTE DOWN THE ANCHOR LINE TELLING PEOPLE TO GET OUT OF THE WATER — IT'S NO JOKE."** But great-white sightings are rare. Slightly more common are sightings of mantas, whale sharks and even sunfish. Says Mead, "Once you get over the initial rush of having seen any shark, you notice its behavior and beauty — there's nothing like seeing a nose poking through a whole school of baitfish." discoverydiving.com



NORTH CAROLINA



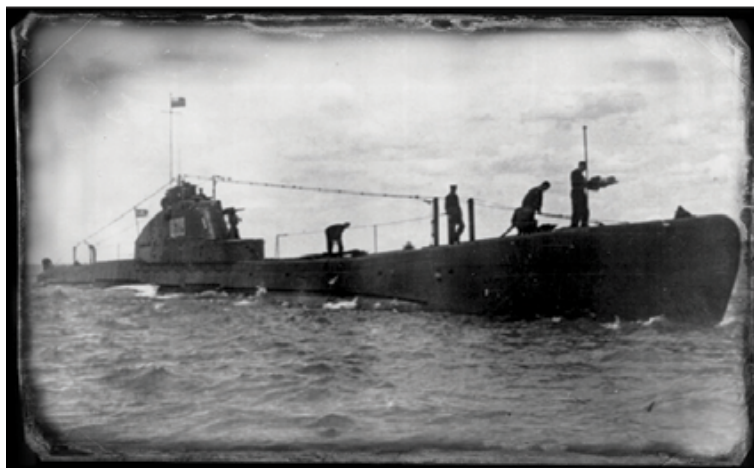
An underwater photograph showing a large, dark, rectangular object, likely a shipwreck, resting on the seabed. The object is covered in marine growth and is surrounded by a sandy bottom. A thin, vertical line, possibly a rope or a diver's line, extends from the top of the frame down towards the wreck. The water is dark and murky, with some light filtering in from above.

A BLACK SEA WRECK IS CELEBRATED, WHILE THE SISTER SUB THAT MAY HAVE TORPEDOED IT IS LEFT TO
BY SANDER EVERING PHOTOGRAPHY BY RENÉ LIPMANN



RUSSIAN ROULETTE

OBLIVION. **THE TRUE STORY**, PRESERVED ON THE SEAFLOOR, WILL MAKE YOUR HAIR STAND ON END



⊕ ⊕ **THE HEAVILY LOADED SUV THUNDERS ALONG THE ROAD – AT CERTAIN POINTS,**

photographer René Lipmann can barely avoid the potholes, but our double tanks in the back don't seem affected. We drive up the steep hills with smiles on our faces, while a camper has to call it quits because it cannot make the ascent. Leaving ancient forests and the rugged Carpathian Mountains behind us, we arrive at the Romanian coastal town of Constanta, where a large boardwalk along the Black Sea leads us to Aquarius, a dive center that belongs to Dutchman Harry Bakker. His dive school is one of the few in this city, although the multitude of wrecks here offer divers much to choose from. We are here for the recently discovered *Moskva* and the Russian sub *SC213*. The Black Sea is far wilder than our own North Sea: The wind can suddenly change, and increases in intensity every hour — there's a reason that the Black Sea was known

to the ancient Greeks as Pontos Axeinos, or the “Inhospitable Sea.”

We don't embark until the second day, in Bakker's 200-horsepower RIB. At times he looks at the sky worriedly, although he tries to hide it. I already have half of my drysuit on — a good thing, with all the splashing. The water moves in a ghostly manner; the direction of the waves looks as if a large, submerged monster is following our movements.

Within a half-hour we reach the site of *Moskva*. The strange swell is making me nauseated, so I quickly jump in to cool off, but the 80-degree water doesn't really do the trick. After an uneventful descent, I'm pleasantly surprised to find much more light than I expected at 90 feet. I am a bit shocked, however, by the sudden drop in temperature, from 80 degrees to 45. Then, suddenly, a piece of the wreck emerges. Exactly on the anchor-line position, the ship is broken in two — we descend into the remains of an enormous explosion. It's difficult to find our bearings; we can see only a few yards ahead of us. I begin

to recognize the contours of a ship — touchdown! We swim across a compass, and I recognize four torpedo tubes, and behind them an installation of antiaircraft guns.

In 2011, the wreckage of *Moskva* was discovered by a team of Russian Global Underwater Explorers (also known as GUE). Well, half of it anyway — the bow section is still missing, although we have our suspicions as to where it can be found. I'm overwhelmed to be here at all; fewer than 20 divers have visited the wreck of this 418-foot destroyer. A few yards ahead I see the enormous barrel of a 130 mm canon that once fired on Constanta. I quietly swim past and look behind the armored shield; in front of this artillery, a few machine guns with their machine depots can still be found. It's striking that there's so little growth on the wreck; as a result, many more details emerge.

FRIENDLY FIRE

On the quarterdeck between two cannons is a semicircular construction, a type of cover for crew members operating the lower cannon. The



The Russian submarine *SC213* (here and opposite) was responsible for one of the greatest maritime disasters of World War II, on Feb. 24, 1942.

⊕ ⊕ ⊕ ⊕ **THERE ARE MULTIPLE THEORIES ABOUT MOSKVA'S DEMISE, ONE OF WHICH THE RUSSIANS UTTERLY KHARKOV. THE QUESTION IS, FROM WHERE DID THE ATTACKS ORIGINATE?**

Dive Conditions

The top layer of the Black Sea can reach nearly 80 degrees, but deeper down it is remarkably cold. Visibility ranges from 15 to 30 feet, and though there can be a surface current, at depth there is no heavy current. Therefore the sea is very suitable for shallow dives; sites are accessible from the shore or from a small boat like an RIB.

The house reef belonging to the Aquarius Dive Center offers shelter to a host of seahorses. During our visit, we were fortunate to spot dolphins on multiple occasions.

Dive Center

Aquarius Dive Center is owned by Harry Bakker and his wife, Doina Geana. Their team organizes a variety of PADI and IANTD training sessions, and also puts together wreck-diving expeditions.

There are wreck dives available for every level of diver. The transport ships *Arkadia* and *Mitera Zafira* and bulk carrier *You Xiu* are in depths that are accessible to recreational divers.

Aquarius offers nitrox and all deco gases up to 100 percent. Trimix is available on demand. A full range of gear is available to rent. (aquarius-diving.ro)

Transportation

It is possible to fly to Constanta, but flying into Bucharest is a better option. From the capital, it is a solid two-hour drive to Constanta.



trapdoors are open; inside my light illuminates where the crew used to sit — I can only imagine the deafening noise. Back across the torpedoes, I swim past a large chimney that has fallen across the structure. Nearby, a machine gun still on its supporting base has shifted a bit.

Unfortunately we soon reach our minimum gas levels for ascent and have to go up. Despite the poor visibility, we rapidly find the anchor line and commence a good half-hour of decompression in lovely warm water. Tiny fish surround us, but I hardly notice; my thoughts are with

the wreck and the dive. With mixed feelings, we make the last stops and climb back on board the RIB. With a fierce wind in my face, I think about a commemoration that took place here not long ago. On June 26, 2011 — exactly 70 years after the 1941 sinking of the *Moskva* — the Russian government organized a large memorial service. A Russian marine ship placed wreaths on the water, and fireworks thundered overhead, a sign of respect for those who lost their lives aboard.

It's strange, however, to think that such a large destroyer could hit a sea mine, break in two, and



ADVANCED ADVENTURE



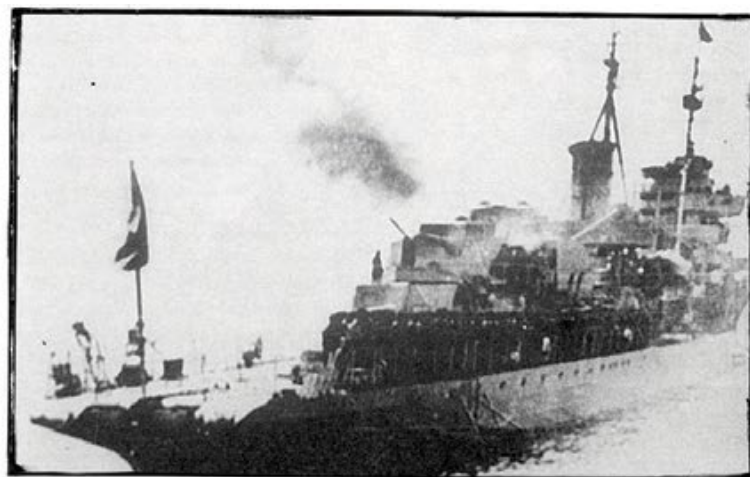
sink so quickly. There are multiple theories about *Moskva's* demise, one of which the Russians utterly reject: Eyewitnesses that day say they saw multiple torpedo attacks on *Moskva* and nearby *Kharkov*. The question is, from where could such an attack have originated? The only submarine known to be in the neighborhood was the SC206. That makes it possible that *Moskva* was sunk by friendly fire from its own Russian SC206. Since then, the SC206 seems to literally and figuratively have disappeared from history. It is public knowledge that the submarine sank

during the war, but the coordinates were very roughly estimated. Not only has the SC206 yet to be located, but evidence has been found that the Russians have purposely hidden its location.

COVER-UP

To clear our heads, we walk along the boardwalk in front of the diving school. A bit farther on, we come to the casino. It's a beautiful old building, dating from 1910, that stands proudly on the rocks along the sea. Almost every day, newlywed couples come here for wedding photos. To our consternation, up close the building is revealed to be desolate and abandoned, with no money and no motivation to restore it. This is true for all of Romania, where the Communist legacy is visible everywhere. After the execution of party leader Nicolae Ceausescu on Christmas Day in 1989, the country was in economic shambles; only in the past 10 years has prosperity, and tourism, increased. Bakker asks if we can handle another story, and we nod with caution.

He tells us that in 2008, he received coordinates from a sport diver who had discovered a strange-looking object in the Black Sea. Bakker went to explore, and at 90 feet he found a submarine. Because it was covered in nets, it was difficult to identify; eventually he managed to remove a convex-shaped object from the wreckage for identification. It turned out to be a gyrocompass that could only have come from the Russian sub SC213 (SC stands for *shchuka*, or pike, in Russian). Bakker informed Russian authorities in Romania of the discovery — the entire crew of 43 had died when the SC213 hit a mine on Oct. 14, 1942 — but he never received a response



Moskva, above, may have been sunk by friendly fire in 1941. Opposite: A diver works to remove nets from a Black Sea wreck.

⊕ ⊕ ⊕ **RIGHT BEHIND THE FIRST ONE IS A SECOND, SMALLER PERISCOPE, THE ATTACK PERISCOPE. IT'S UNCLEAR WHETHER ANY PART OF THE INTERIOR IS STILL DRY — THE ONLY CERTAINTY IS THAT THE ENTIRE CREW IS STILL INSIDE. THE THOUGHT GIVES ME THE CREEPS.**

from the Russian authorities.

The *SC213*'s involvement in one of the greatest maritime disasters of WWII could hold a clue. The Bulgarian ship *Struma* left Constanta in December 1941 with 769 Jewish refugees on board, trying to reach the safety of the British Mandate in Palestine. The ship had engine trouble and arrived instead in Istanbul. Neither the Turks nor the Brits really wanted to take in or help the refugees. After *Struma* had been two months in the harbor, the Turkish government cut its anchor ropes, and the ship was set adrift in the Black Sea. The day after, on Feb. 24, 1942, *Struma* was torpedoed by the *SC213*. Of 769 people on board, only a single 19-year-old survived.

THE PIKE

The 192-foot *SC213* is the wreck we are diving today, lying at a maximum depth of about 100 feet. Its tail with two propellers lies partly in the sand, but the rest of the submarine is completely clear. At its tip the sandy bottom has been swept away a bit, and it has almost come away from the seafloor. Unfortunately, the boat has been covered in nets from top to bottom, and we don't have a clear view of what is beneath them. Two periscopes stick out; the glass eye of an anti-aircraft periscope is still transparent and glistening. I find myself wishing that the periscope would look in instead of out, so I could peer into the submarine. Right behind the first one is a second, smaller periscope: the attack periscope. It's unclear whether any part of the interior is still dry — the only certainty is that the entire crew is

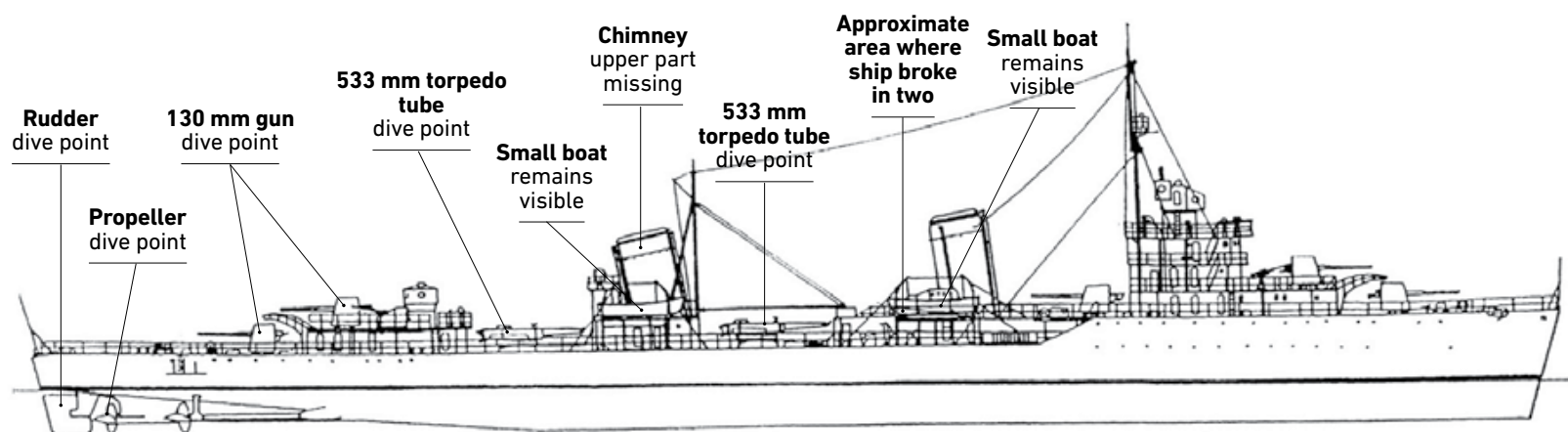
still inside. The thought gives me the creeps.

Later, after analyzing photos, we discover that the amount of netting on the boat has seriously increased since the previous winter. Then, the bow was completely bare; now it's entirely covered. Because the nets present a danger to divers and marine life — but also because we would like to photograph the bow without the nets — when we return, we spend an entire dive removing the nets. After about 45 minutes, the nets in the front are gone, restoring a beautiful view of the enormous opening where torpedoes left the submarine. From this porthole, the torpedo made its way to *Struma*, which exploded.

Our last dive to the *SC213* is pure bliss — after an hour on the surface, all the dust has settled, and only now do I see the result of our hard work. It seems as if the Pike has come alive again.

CONNECTING THE DOTS

The wrecks we visited seemingly did not have a connection, but they are most likely inextricably linked. Russian archives contain images that show the *SC213*, with the gyrocompass that Bakker retrieved, in a place that matched only that sub. The fact that no one was seeking the *SC213* is perhaps logical — it was responsible for the murder of almost 800 Jewish refugees — but why the silence on the whereabouts of *SC206*? The most logical explanation for hiding that sub — and for the enormous explosion on the *Moskva* — are probably one and the same: *Moskva* was torpedoed by its own submarine, the *SC206*.



THE STORY BEHIND THE SHIP Germany and the Axis Powers — which included Romania — officially declared war on Russia on June 22, 1941. Four days later, a Russian fleet arrived to destroy as many oil wells in Constanta harbor as possible. The small Russian fleet consisted of two destroyer leaders — *Kharkov* and *Moskva* — a cruiser and two C-class destroyers. At 5 a.m., heavy cannon shots were heard across the Black Sea. After only the second round, the main target had been hit and the oil reserve went up in flames. Two Romanian destroyers attacked *Moskva* and *Kharkov* but completely missed their targets. In the second round, they missed from only dozens of yards. *Moskva* and *Kharkov* retreated, and threw up a smoke curtain. But the wind dispelled the curtain, and they were under fire again. *Moskva* got the order to increase its speed. Almost immediately afterward, an enormous explosion was heard. A white bolt of lightning shot 30 yards in the air. The destroyer leader broke in two and started to sink. *Kharkov* tried to save the crew but to no avail. At 05:28 *Kharkov* was ordered to retreat and to abandon its battle comrades. Of 344 crew members, 62 sailors and 7 officers were picked up by motorboats and Romanian water planes throughout the night; the rest had drowned.

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FIVE WAYS TO FLY LIKE A JET FIGHTER ON YOUR NEXT DRIFT DIVE

BY ERIC MICHAEL

Although ocean currents are unpredictable and dangerous at times, when Mother Nature offers a manageable push in the right direction, the result is one of the most pleasurable underwater experiences possible: drift diving.

At destinations around the world famous for this low-effort style of diving — South Florida, Tobago, British Columbia, Cozumel, French Polynesia, Palau, Indonesia, the Maldives and Red Sea — flying at high speed over scenic reefs where big pelagics come to feed and play is a rush every diver should experience. But to enjoy the ride safely, special techniques, planning and equipment considerations must be made. For an expert's perspective, I tapped Tim Massimino from Scuba Club Cozumel. The Chicago native became a dive instructor on the Mexican island in 1976, and he's spent the past 39 years earning his underwater wings in some of the

most prime drift-diving conditions on the planet.

"It's always best to listen to the divemaster's briefings and ask questions if you're not sure about something," Massimino says. "Watch the divers who have more experience than you, and you will learn from their actions."

Here are five of Massimino's best tips:

STREAMLINE YOUR KIT

"The best advice for drift diving is to streamline your equipment, and make sure your hoses are secure and not dangling about," says Massimino. Currents can exacerbate the potential hazards of an unruly kit, including entanglement and damage to the reef. Strong currents can rip first stages from mouths and swat

In places like Cozumel, drift diving is the norm — the dive boat follows divers' bubbles.

masks off faces, so it pays to be mindful and move your head slowly. He also advises to "always have a surface marker buoy and a whistle with you in case you surface away from the boat." And practice how to use them before the need arises.



DIVE HACKS Wild or mild, currents present challenges for divers [P 55](#)
IMAGING Use Lightroom to convert photos to black-and-white [P 57](#)
LESSONS FOR LIFE A fatal accident that could have been prevented [P 59](#)
DIVING DOCTOR Can you identify a case of the skin bends? [P 61](#)

BRENT DURAND

CREATE A DRIFT-SPECIFIC PROFILE

Current complicates logistics. Your dive plan should be informed by up-to-date local knowledge of the conditions, and compensate for the added variables of speed and direction.

"A common mistake is swimming with the current," says Massimino. Powered by the flow, "you might feel like Superman, but you'll cover too much reef too quickly and potentially run out of reef before you run out of air."

And know when to call the dive. "When you can't control the pace of the dive, you might expend more energy than you're used to and get winded," he says.

FOCUS ON NEUTRAL BUOYANCY

Practicing proper buoyancy on every dive is not only safer, but it is also more

responsible. With the added velocity of a drift dive, it can be more difficult to avoid collisions, and this diminished level of control can be dangerous to you — and the reef.

"Maintaining neutral buoyancy allows the diver to really enjoy one of the best benefits of drift diving, which is not having to expend energy to travel over the reef," says Massimino.

Making small adjustments with your breathing and steering subtly with your body can make the difference between a smooth flight and a demolition derby.

USE THE REEF TO CATCH A BREAK

Utilize topography to your advantage. "Learn how to find the natural areas where you can duck down and get out of the current," Massimino says. Seek

shelter behind coral heads, in pockets or small caves of the wall or other structural features, and in the lee of large filter-feeding sponges, which are typically robust and plentiful on reefs swept by strong, nutrient-rich currents. Marine life invented this technique; the quiet places are also prime for critter spotting.

RIDE THE WAVE

To dial directly into the strength and direction of the flow, Massimino recommends watching the fish. "They usually face into the current and swim at a pace that maintains their position," he says.

And if you're compelled to stop to enjoy the view, take a photograph or wait for a buddy; don't kick into overdrive. "Slow, steady kicks will always win out over furious finning," says Massimino.

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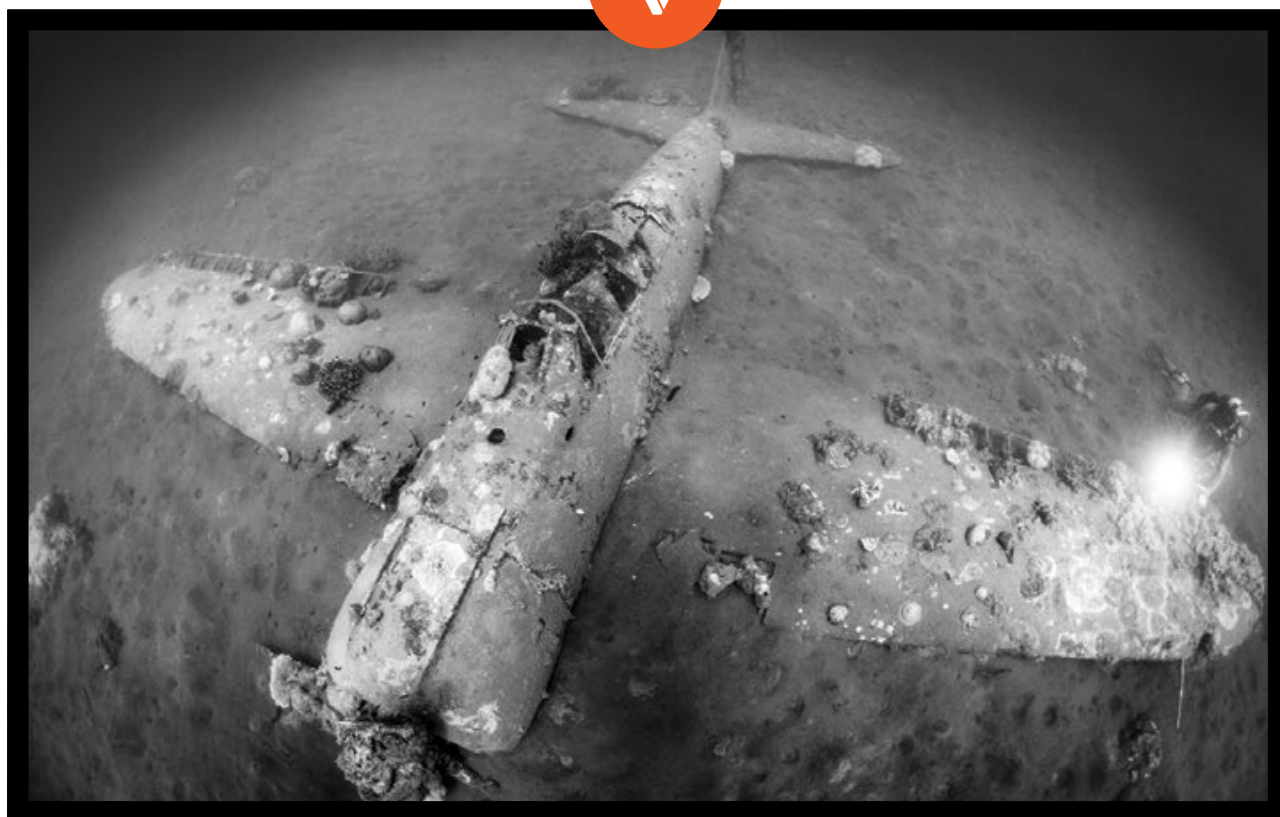
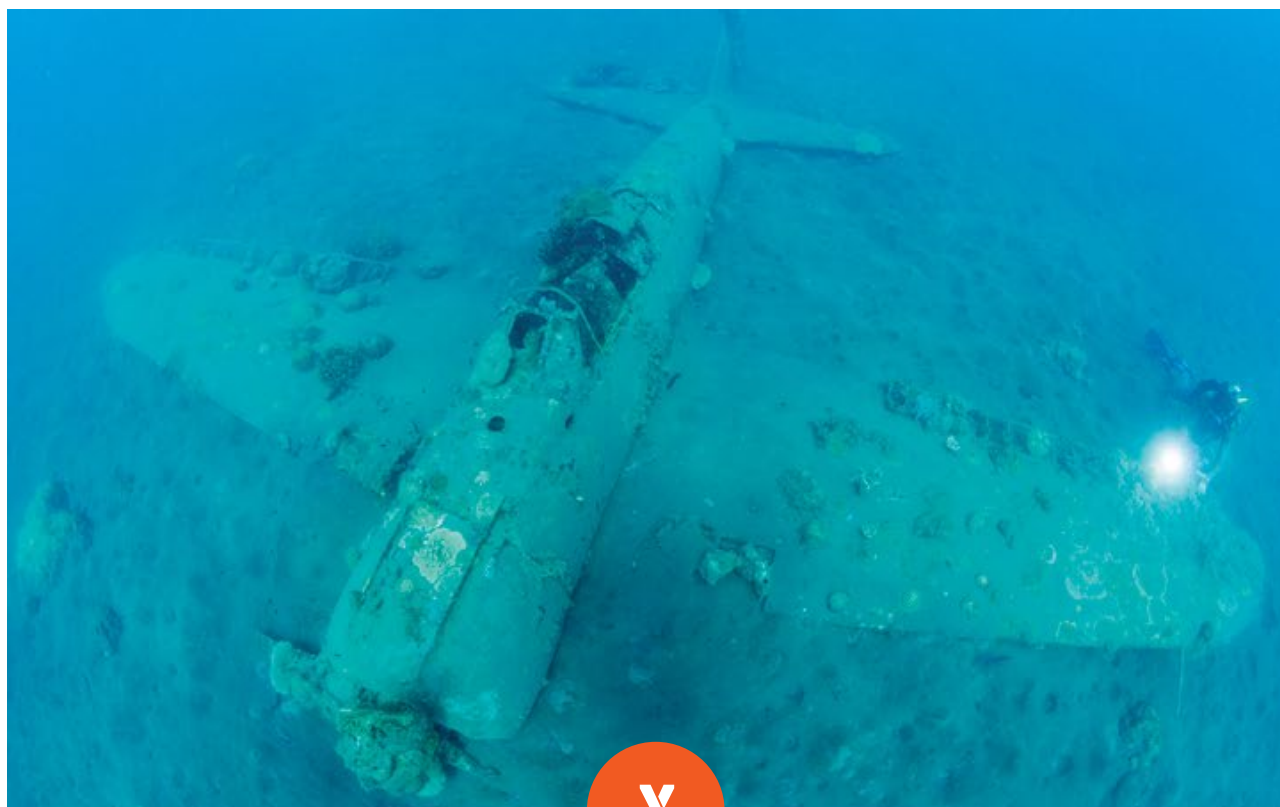
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Photo: David Benz ©



TRAINING IMAGING

65,536 SHADES OF GRAY

HOW TO MAKE SEXY
BLACK-AND-WHITE
CONVERSIONS

TEXT AND PHOTOS BY
ERIN QUIGLEY

The first step to making a good black-and-white image is implicit in its name. You've got to have clean black and real white somewhere in your photo. For the best black-and-white conversion, you should shoot in RAW, which delivers up to 65,536 shades

of gray, while JPEG gets you a paltry 256. The richness of a RAW file gives you enormous flexibility in post. If your camera doesn't offer the option of RAW, you should shoot in color and do your black-and-white conversion in Lightroom or Photoshop.

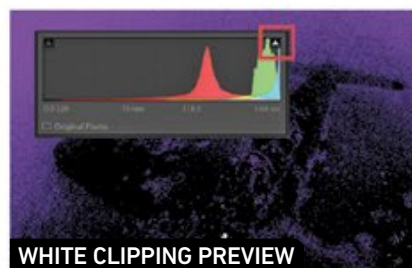
You'll have a more supple file to work with, and more of a role in the artistic decision-making.

Something else to consider: When color is not a factor, contrast becomes king. If you're not using color to grab attention, then contrast, form, pattern and movement lead the eye. Choose subjects like sharks, whales, rays, schooling fish, silhouettes and wrecks that don't rely on color for impact. Not every image is a good candidate for black-and-white conversion.

I've chosen a wreck for this example because they're often shot with flat light in crappy conditions, but they are full of contrast, form and texture, making them perfect for black-and-white conversion.

1 Before switching to black-and-white, make some basic corrections to the color image.

Start by choosing the best option from the profiles in the Camera Calibration panel (RAW formats only), then head back to the Basic panel. Set the White Balance, and wrangle Exposure and Contrast into the ballpark. Next, set the white and black points using the White and Black sliders. A cool way of seeing exactly where the white and black points fall is to hold down Option (Mac) or Alt (PC), then click and drag on the White or Black slider. Lightroom reveals a clipping preview screen that displays color where any channel reaches pure black or white. Move the slider until you begin to see



LIGHTROOM TIP The histogram is your friend during the conversion process. Keep an eye on the small triangles at the upper right (whites) and left (blacks) corners of the histogram panel. When they light up, it's because at least one color channel is clipping, and it's time to back off.

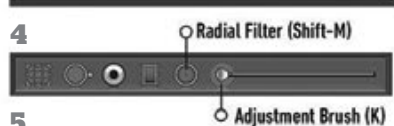
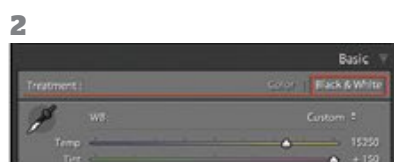
clipping appear, then back it off a smidge. If your image gets blown out or crushed (too dark) when you set the white and black points, use the Highlights and Shadows sliders to restore detail.

2 Make a black-and-white conversion by clicking on the Black and White Treatment option at the top right of the Basic panel (keyboard shortcut "V").

Unfortunately, Lightroom's default black-and-white conversion is usually far from compelling. Spice it up by re-adjusting the Basic panel sliders. Continue to check for clipping, and please go easy on Clarity! You can add it selectively later. Friends don't let friends overuse Clarity.

3 Refine your image using the Black and White panel.

Each slider in the Black



and White panel controls the brightness of its related color channel. If you don't remember what was blue or what was aqua in your image, no worries — you can use the Targeted Adjustment Tool (TAT) to intuitively adjust the lightness and darkness of each

color. Activate the TAT, place it on top of the image, and simply click and drag up or down to lighten or darken that part of your picture. Don't forget to check your work at 1-to-1 magnification — it's easy to get some embossed-looking edges if you lean too hard on these sliders. Once you've adjusted the image to your liking, you can see a before and after by toggling the Panel On/Off switch.

4 Create focus and detail with Local Tools.

The Adjustment Brush and Radial Filter are a dynamic duo when it comes to detailing your shot. Use the Adjustment Brush with Clarity to add pop to textures, dappled light and sun rays. The Radial Filter excels at creating lighting effects and custom vignettes. You can lead the viewer's eye to any place in your image by

building light where you want it. Using the Radial Filter is very much like being able to add a strobe in post.

5 Check Before and After views often using Keyboard Shortcuts.

» Backslash “\” compares the original version to the current edit.
 » “Y” reveals a side-by-side before and after.
 » Command-click (Mac) or R-click (PC) on any History step, and choose “Copy History Step Settings to Before” in order to make it the “Before” view.
 » Toggle Panel On/Off switches to review adjustments made in just that panel.

» Erin Quigley is an Adobe ACE certified digital-imaging consultant and an award-winning shooter. GoAskErin.com provides custom tutorials and one-on-one instruction for the underwater photographic community.

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PRESSURE LEADS TO PANIC

FAILURE TO EQUALIZE CAUSES DIVER TO MAKE FATAL MISTAKES

BY ERIC DOUGLAS



The pressure in Diane's ear kept increasing despite her efforts to equalize. She did everything she could to relieve the pain: She stopped and hovered; she pinched her nose and blew; she wiggled her jaw and tilted her head from side to side. Nothing helped. The more it hurt, and the more she tried to make it stop, the less she thought about the dive. Right up until she couldn't think of anything but getting to the surface.

THE DIVER

Diane was 38, with an advanced open water certification. She had been diving for four years and logged 40 dives. Aside from one trip to the ocean, most

of her dives were made at a nearby mountain lake 6,000 feet above sea level. She was used to the diving and enjoyed it, although she often talked about getting back to warm Caribbean waters. The lake was clear but cold, and she hated the extra weight and heavy wetsuit she had to wear, not to mention the short diving season. Diane had had a cold the week before the dive, but it seemed to have cleared up.

THE DIVE

Conditions were just about perfect on the mountain where Diane and her buddy, Phil, were diving. The sun was out, and there was very little wind. Water temperatures were in

the mid-60s at the surface, although below the first thermocline, it was significantly colder. Underwater visibility was around 20 feet, typical for the dive site. Because of the elevation, Diane and Phil planned the dive using U.S. Navy altitude adjustment tables, diving as if they were at a deeper depth. Their dive computers were also set to account for the altitude. This was their first dive of the summer.

THE ACCIDENT

Diane and Phil walked into the water until it was deep enough to float, donned their fins, and agreed to start the dive. Diane's problems began almost immediately, but she didn't realize what was happening until she had been underwater for a few minutes. She was a little rusty from the winter layoff, and it took her a moment to remember her training as she began to descend. Diane equalized for the first time a few feet underwater and attempted to equalize again every so often — mostly when she felt pressure building in her ears. Diane followed Phil down a gentle slope, moving toward some rocks and submerged trees on the bottom.

By the time she was 15 feet down, the pain in Diane's ears was distracting. Phil was swimming just ahead of her, and she didn't want to interrupt him. She continued to descend, and tried to fight with the building pain and pressure on her own. At 28 feet, Phil paused to check on Diane. He could tell by the look in her eyes that something was wrong. She wasn't focused on anything other than frantically trying to equalize her ears. Phil tried to signal to her to calm down, but she didn't acknowledge him. After a moment together, Diane bolted straight for the surface. They were 15 minutes into the dive.

Phil surfaced behind Diane, doing his best to ascend safely. When he caught up with her, Diane's regulator was out of her mouth, and her mask was off. She kept saying she couldn't breathe. Phil helped her to the shore where she lost consciousness; other divers in the area called for emergency medical services. Diane was taken to a hospital and was treated using



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U.S. Navy Treatment Table 6, but she never regained consciousness.

ANALYSIS

While Diane didn't have vast experience as a diver, she was relatively experienced in the environment she was in. Diving in mountain lakes comes with its own set of challenges — reduced atmospheric pressure, cold air and cold water — but none of those issues was a factor in this dive accident.

Ear problems are by far the most common diving-related injury. Most of the time, they lead to some ear pain, which is caused when blood or plasma leaks into the middle ear as the body

DIANE WAS SO FOCUSED ON HER EQUIPMENT AND GETTING UNDERWATER AT THE BEGINNING OF THE DIVE THAT SHE FAILED TO EQUALIZE.

attempts to equalize the pressure. Ear injuries, including ear-drum perforations, typically resolve within a few weeks. They may require antibiotics or other care from a physician, but it is rare that they trigger a fatal accident.

In most cases, it isn't the problem or trigger that causes an accident, but the diver's response to that trigger. If Diane had stopped her descent as soon as she felt pressure building in her ears, and ascended a few feet to equalize before attempting to go deeper, she would have been fine. But she didn't.

Instead, Diane continued to descend while she attempted to equalize. Just a few feet down, ambient pressure closes the Eustachian tubes that connect the throat to the middle ear, and it is impossible to force air through them — just like a kinked straw. Once the tubes are closed, there is no way to reopen them without relieving the outside pressure.

The pain in Diane's ears led to perceptual narrowing. She began to panic, and the only option she could see was reaching the surface immediately. It's likely that she forgot to exhale continuously on her ascent, subsequently suffering an air embolism.

Diane had had a head cold a few days before the dive, but she felt her symptoms had cleared. It can take up to two weeks before a person's sinus cavities and mucus membranes return to normal, even if the obvious signs and symptoms have cleared. Diane probably had some residual sinus blockages — when her ears didn't equalize immediately, there was nothing she was going to be able to do about it underwater.

Because of her cold, Diane was unable to relieve her ear pressure, but she used a number of techniques to help with equalization. She moved her jaw from side to side and pointed her "slow" ear upward, which stretches the Eustachian tube and helps it get unkinked. Working against her: Diane and Phil swam down as they descended, following the bottom contour of the lake. Their head-down position made it harder to equalize.

Lastly, it had been a while since Diane's last dive, and she could have benefited from a refresher. The amount of time that warrants a refresher course varies for everyone. Some people might be fine with a year between dives; others might need one after six months. This is especially true for those who dive in an area that requires more equipment, heavier wetsuits and more weight to get down. Diane was so focused on her equipment and getting underwater at the beginning of the dive that she failed to equalize, and that set into motion a series of events that led to disaster.

» **Eric Douglas** co-authored the book *Scuba Diving Safety*, and has written a series of adventure novels, children's books, and short stories — all with an ocean and scuba-diving theme. Check out his website at booksbyeric.com.

LESSONS FOR LIFE

- 1 EQUALIZE EARLY AND OFTEN** If you have trouble equalizing, slowly descend feet first.
- 2 DON'T DIVE CONGESTED** It often takes up to two weeks for cold symptoms to completely clear, so make sure you're fully recovered before diving.
- 3 STAY IN CONTROL** Perceptual narrowing and panic lead to bad choices. If you feel yourself struggling on a dive, take time to stop, rest and calm down. If you can't, abort the dive safely.
- 4 TUNE UP** Take a diving refresher if you have been out of the water for any length of time. A few minutes in a pool or other controlled environment is usually all it takes.

TRAINING

DIVING DOCTOR

SKIN DEEP

CUTANEOUS DECOMPRESSION SICKNESS — AKA SKIN BENDS — IS OFTEN IGNORED. DO YOU RECOGNIZE THE SIGNS?

JAMES L. CARUSO, M.D.

Q: I GOT A SKIN RASH ON MY ARMS AND BELLY DURING MY LAST DIVE TRIP. SOMEONE SAID I HAD SKIN BENDS. IS THERE SUCH A THING?

A: Yes, there is such a thing as skin bends, and it can range from a temporary issue that disappears on its own to something that requires medical attention. Most diving physicians believe the rash is caused by bubble formation within the skin itself. Symptoms of minor skin bends after the dive vary from itching without any rash to itching accompanied by a fine, pink, sandpaperlike skin rash that appears mostly on the chest, shoulders, back and upper thighs. In either of these cases, the itching and rash — if there is a rash — disappear within a couple of hours.

The more severe form of skin bends is known as cutis marmorata (marbled or mottled skin). This frequently begins as a small area of redness shortly after surfacing that may be irritating and progressively expand. The rash then typically deepens in color and becomes less irritating before darkening in some areas and lightening up in others, taking on the mottled appearance for which it is named. This type of skin bends is most often associated with deep bounce dives and omitted decompression time. Not surprisingly, there is an association between cutis marmorata and more severe symptoms of decompression sickness, including those involving the spine, lungs and circulatory system. Any diver who develops the characteristic skin changes of cutis marmorata should quickly seek medical evaluation, especially if the diving was deep or if there was a missed decompression obligation.

» James L. Caruso is a 30-year veteran of the U.S. Navy, serving as ship's doctor, undersea medical officer and flight surgeon. His experience includes a fellowship in Diving and Hyperbaric Medicine at Duke University Medical Center; today he is Denver's chief medical examiner.



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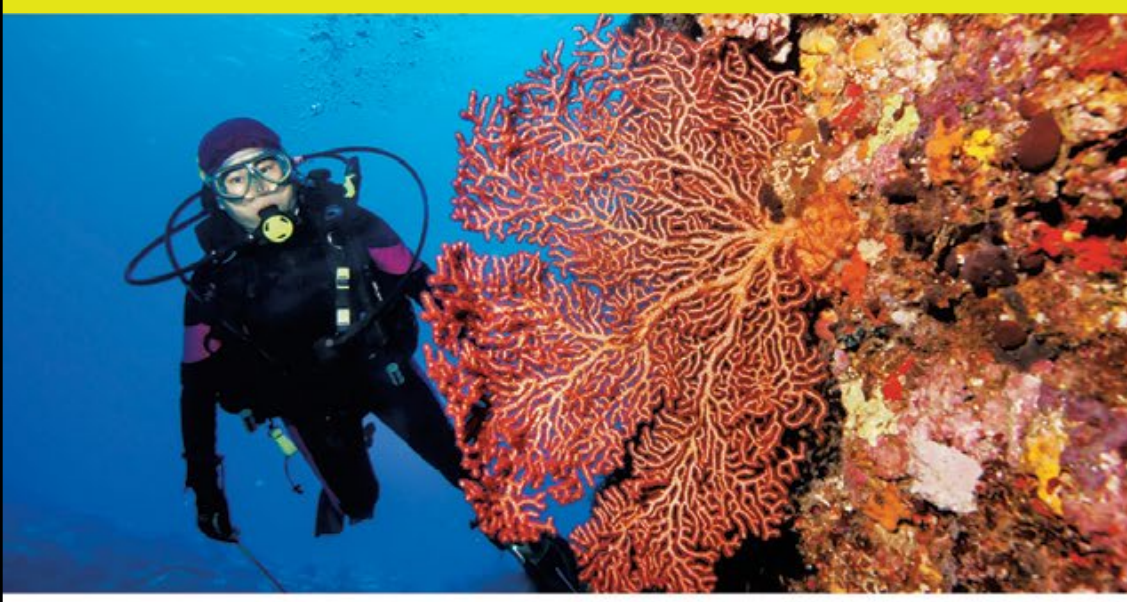


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BY MARY FRANCES EMMONS

Two-hundred-thousand years is a helluva surface interval. That's more or less how long the Ice Age peaks of the massive Cayman Ridge may have been exposed, as sea levels rose and fell and rose again, eventually birthing prehistoric coral heads along the underwater mountain range that flanks the 25,000-foot-deep Cayman Trench.

The process left the Cayman Islands — Grand, Little and Brac — with barely enough landmass to show up against their spectacular sunsets, and gifted them with perhaps the best diving conditions in the Caribbean.

Thirty years is barely an exhale by comparison. But for a young sport like scuba diving, one that counts its entire life span in decades, 30 years is a milestone that harks back to another age, when the Cayman Islands' underwater treasures were just being discovered.

THE RV OF THE SEA

In 1984, the first *Cayman Aggressor* — converted from a staff transport used in the Gulf oil fields — had “a sort of epoxy” floors, and only two air conditioners. “It would blow down the hall, and you’d hope for some cold air” in the cabins, says Wayne Hasson, 65, then-captain and jack of all tasks on the first *Aggressor*. Today, he’s president of the 16-vessel Aggressor and Dancer Fleet.

An ex-submarine rescue vessel, *Kittiwake* recovered the black box from the Space Shuttle *Challenger* disaster in 1986.

“It was kind of crude, really,” Hasson says of that first boat, but it was an instant hit. “There was nothing else like it. People gravitated to it.”

Compare that with today. *Cayman Aggressor IV* offers coffee service delivered to your suite each morning, flat-screen high-definition TVs in every cabin, and specialty weeks like Wine Appreciation, when night dives become dusk dives and four-course dinners include an introduction to a two-varietal tasting, a little something extra for divers revisiting a favorite destination.

The Cayman Islands are known for their spectacular walls, but we start with an entire day of wreck diving. The star of the show is 251-foot *Kittiwake* — perfectly prepared for divers — that somehow seems bigger on the inside than out. Yet I’m surprised to find the nearby reef almost steals the show — fantastical formations draped with sponges and whip corals, pocked with swim-throughs and peek-a-boo windows onto vistas made possible by the islands’ startlingly clear waters.

Also on the roster is the *Doc Poulson*, a jaunty little barge with tons of life waving gaily from every surface, and a wreck-of-a-wreck, *Oro Verde*, with a crazy backstory — drug running, mutiny, cement fins — that suits its chaotic condition. On all three wrecks I watch divers running lines and reeling them back in as they crisscross and circle the ships, weaving in and out of bulkheads where they can, all under the watchful eye of an instructor.

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Tibbetts is one of only a few sunken Soviet naval vessels in the Western Hemisphere, and the only one that is easily dived.

Things take a turn for the spooky-cool when we get to Cayman Brac's *Capt. Keith Tibbetts*, a 330-foot Russian destroyer torqued in two by Hurricane Ivan. Its midships is smashed to smithereens as if by a mighty hand, and its penetrable bow isn't for the faint of heart — although it makes a fine proving ground for those divers working on wreck certifications aboard *CAIV*.

Tons of diving — five a day is the norm on Aggressor Fleet yachts — means many surface intervals. Of 15 divers aboard, one-third were spending that time pursuing certifications from advanced to wreck to nitrox and underwater photography.

David Cheever, 45, of Dallas, was working on both wreck and underwater photography, in completion of his Master Scuba Diver rating. He was full of praise for *CAIV* instructor Alan Lawlor, 40. "He's forgotten more about wrecks than I'll ever know. He was a great instructor," Cheever says.

That's echoed by Bill and Sue Miller, retirees from Phoenix who took up scuba about four years ago. Lawlor's approach, while rigorous, still made it "totally fun," says Sue, 67. "It gives us more independence," she adds.

Independence is a hallmark of Aggressor and Dancer Fleet diving, where you are free to strike out with your buddy or dive with staff, as you like. I head out one day with Capt. Lauren Hill, 36, a transplanted New Zealander who's been *CAIV*'s captain for just over two years, to a northwest Grand Cayman site called Big Tunnel.

NEED TO KNOW

WHEN TO GO

The Cayman Islands is a year-round dive destination. The rainy season runs June through October.

DIVING CONDITIONS

Water temps range from the high 70s in winter to the low 80s in summer. Average visibility is 90 feet but can reach virtually to infinity; weather, tides, and spring and fall plankton blooms can affect this.

OPERATOR

Aggressor Fleet and Dancer Fleet (aggressor.com) operates the 110-foot steel-hulled *Cayman Aggressor IV*, which dives all three Cayman Islands, weather permitting, departing from George Town, Grand Cayman.

PRICE TAG

Prices start at \$2,595 per person, double occupancy, nitrox not included, for seven-night cruises with five-and-a-half days of diving.

"The topography is incredible," she says, "the arches and swim-throughs. It's near the point, so there's always current, and lots of life."

She's not exaggerating — the current here is the stiffest we encounter. But it's worth it for the natural arches and deep ravines eroded by eons of moving water, which sustains life in all its briny forms, most spectacularly several stands of thickly stacked black coral fans. Each of the 16 Cayman Islands sites we dive casts its own spell, all with viz so good that it borders on the unbelievable.

CARINE SCHRURS/NATUREPL.COM

Especially impressive are the walls off Little Cayman's famous Bloody Bay. They have far more fish life than I expect — at times it seems we're enveloped by fish confetti. A Little Cayman site called Great Wall is "the walliest wall you'll ever do," says Capt. Hill. We take a moment to appreciate how massive it is — we kick out into the blue a bit, then look back at its vast, vertical face.

A NEW CENTURY

In 1999, Wayne B. Brown was a successful Augusta, Georgia, businessman with teenage children. Looking for activities to share with them, one day he stopped at a local scuba shop, and asked about certification for himself and his then-15-year-old son. Within a few years his daughter was hooked too, and a family passion was born.

Many dive trips later, the Browns enjoyed an expedition aboard the *Galapagos Aggressor*. Brown was impressed; a subsequent trip aboard *Belize Aggressor* confirmed his impressions. Was the company perhaps for sale?

Turned out, it was. *Aggressor's* original owner, Paul Haines, had died, and his children didn't want to run the business.

It's been a boon for Brown, 53, now *Aggressor* and *Dancer Fleet's* CEO. An avid underwater photographer, his favorite site on *CAIV's* itinerary is Little Cayman's The Meadows, and it's easy to see why: It's a beautiful dive site.

A trio of resident Caribbean reef sharks follows us along a plunging wall festooned with sponges. Visibility seems to go on for miles, allowing you to witness the diversity and volume of fish life present here. Fin over the wall's edge, and you'll discover crystalline plains at about 40 feet, where eagle rays, sting rays and the occasional nurse shark go about their business, along with macro finds like nudis the size of a grain of rice on the bottom. Finish up in the shallows in "the maze," with über-friendly grouper lolling at your heels, practically wagging their tails. It's a hugely satisfying site.

As our week draws to a close, I ask Brown about the next 30 years. "We try every year to add more service amenities and upgrade the yachts," he says. "I see us doing that every year, to stay the largest and best fleet out there."

"We gave it our all, heart and soul, and we loved it," Hasson says of that first *Cayman Aggressor*. And they still do: "Service Above Self" is the fleet's motto. "I love what I do," Hasson says. "As long as I'm doing this, I'm happy."



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TOP 100

THE BAY ISLANDS



THERE'S A GOOD REASON THIS ENGLISH-SPEAKING DESTINATION EARNED THREE HONORS IN OUR ANNUAL TOP 100 AWARDS: OUTSTANDING BEGINNER DIVING, MACRO FINDS, AND ITS NETWORK OF CAVES, CAVERNS AND TUNNELS.

BY BROOKE MORTON

Two hours from Miami by plane yet worlds away, the Bay Islands of Honduras feels exotic for good reason. This trio of islands in the western Caribbean offers underwater encounters that run the gamut, from reef sharks and whale sharks to macro critters like seahorses and cowfish. And although most dives begin along gently sloping drop-offs, you can also find

pinnacles and seamounts, and a network of cracks and crevices that make for adrenaline-inducing swim-throughs.

SHEER IMPACT

"Check out Google Earth to see the dramatic topography," says Andy Phillips, PADI course director for Utila Dive Center. He's talking about those pinnacles, seamounts and drop-offs that tec divers

target. Because the destination doesn't see the degree of tec traffic that other Caribbean locales do, much of the island's deeper real estate remains largely unexplored. For those with the skills and willingness to explore what lies below, first descents — aka diving and naming virgin territory — are still to be had.

TUNNEL VISIONS

In the category of best caves, caverns and grottoes, these islands earned a top-five ranking in the Caribbean and Atlantic. It's clear why once you dive Spooky Channel on Roatan's north shore. Swimming through this crack in the reef feels like walking between Manhattan skyscrapers: You'll wedge between walls spanning 100 feet before coming to a grotto at 65 feet. Dolphin's Den is another must-see, named for a group of animals that swam into the tunnel and became disoriented in 2007; their bones remain inside. At Bear's Den, kick



Filter-feeding whale sharks feast on plankton in Utila, which also boasts beautiful beaches (right).

FROM LEFT: VLADIMIR LEVANTOVSKY/GETTY IMAGES; MICHAEL MELFORD/NATIONAL GEOGRAPHIC CREATIVE

through a long, narrow cave where overhead cutouts too small to serve as exits filter in light.

MACRO MECCA

Voted No. 3 for best macro diving in the Caribbean and Atlantic region, Roatan and Utila will have you constantly reaching for Paul Humann and Ned DeLoach's *Reef Creature Identification* book. At sites like Calvin's Crack, don't think that when the guide flashes the seahorse sign

that there's just one. There's no system yet to ask which color — white, orange, yellow, etc. — so bring a slate to ask for follow-up details. As for what other macro critters you'll encounter, the list is rather extensive: frogfish, decorator crabs, box crabs, flatworms and nudibranchs are just the beginning. Bonus: Because this area is known for macro, many guides excel at spotting the critters, and at making sure you don't swim past finds.

NEWBIES WELCOME

The Bay Islands scored second in our Readers' Choice awards for beginner



divers in the Caribbean and Atlantic region, which doesn't surprise Mitch Karlson. "Today alone, we have five groups of divers from the States doing open-water classes," says the general manager of CoCo View Resort on Roatan. The destination is well suited to those looking to gain experience: The water is warm and clear, and many sites lie within 60 feet. Plus, several areas, including the "front yard" of CoCo View Resort, offer shore-entry, making it easy for newbies as well as more-experienced divers wanting to work on new skills and certifications.

SPRING BREAK FOR GIANTS

Nowhere else in the Caribbean do whale sharks feed vertically, swooping straight toward the surface to inhale plankton.

NEED TO KNOW

WHEN TO GO

When planning your trip, it's important to keep in mind that the Bay Islands aren't outside the hurricane belt; otherwise, diving conditions are excellent virtually year-round.

TRAVEL TIP

"Go directly to Roatan — don't go through the mainland because it's a pain in the butt," says CoCo View Resort's Mitch Karlson. Direct international flights to Utila are not available.

DIVE CONDITIONS

Water temperatures dip as low as 78 degrees in winter, to 86 degrees in September. Visibility is almost consistently 80 feet and above; the range varies between 60 and 120 feet.

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Between March and April, you can witness this behavior while swimming with these massive filter-feeders off Utila. "My favorite encounter started when a whale shark snuck up on us," says Phillips. "We had been looking in the opposite direction and could have missed the sighting — but we did connect, and it stayed with us for 20 minutes."

NIGHT DIVING

One of the bonuses of Roatan is that with so many large-scale resorts, you don't have to ask if there's a night dive happening — you just add your name to the manifest. You'll spot unfolding basket stars, octopuses on the hunt, and lobsters skittering across sand. If you're visiting within a few days of a new moon, you can also see a bioluminescent phenomenon called string of pearls. You'll need everyone in the group to turn off their dive lights for at least three minutes before you start to see tiny, white orbs form in the water column, one atop the other. What you're witnessing is a mating mechanism of deepwater crustaceans rising from the depths, but it feels like an underwater city slowly coming alive.

1

TOP 100

TOP 100 BAY ISLANDS

TOPSIDE PERK

Although technically you can find patches of jungle on Roatan and Utila, they're nothing like what you'll experience on the mainland. When you cross to **La Ceiba**, lush rainforest parks big enough to contain rushing rivers await. There, companies like Omega Tours offer day-trip eco-adventures that will send you rafting down the Rio Sico and hiking through the breathtaking Rio Cangrejal valley.



EAT

Roatan's Temporary Cal's Cantina is popular with the locals for its inspired Mexican fare and high perch overlooking the areas of Parrot Bay and First Bight. The menu changes daily. You can find anything from **grilled lobster** to nachos and chile rellenos. One thing that doesn't change about this open-air hangout is that the margaritas are always potent. Note that this joint is open Tuesday through Friday only.



PHOTO OP

During your stay at Utila, take at least an hour to check out the **Jade Seahorse and Nightland Cabins**. Former art teacher Neil Keller has transformed his backyard into a massive art installation with millions of bits of glass, beads, and other flotsam cemented into walls, benches, and arches. Spend the night in one of the cabins, or stop by for a drink at the tree-house bar — you'll feel like Alice in Wonderland.



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LOOK



PHOTOGRAPHER

Alex Mustard

LOCATION

Red Sea, Sinai, Egypt

ABOUT THE SHOT

A school of Bohar snapper can be the size of a bus. Here, I wanted to capture the personality of an individual against the backdrop of the aggregation. I used a Nikon D100 and Nikon 105mm lens in a Subal housing set at $f/13$, $1/45$ sec, ISO 200, Subtronic strobes and a lighting technique that I named underwater telephoto, where the flashes are positioned out in front of the camera to reduce their light path.

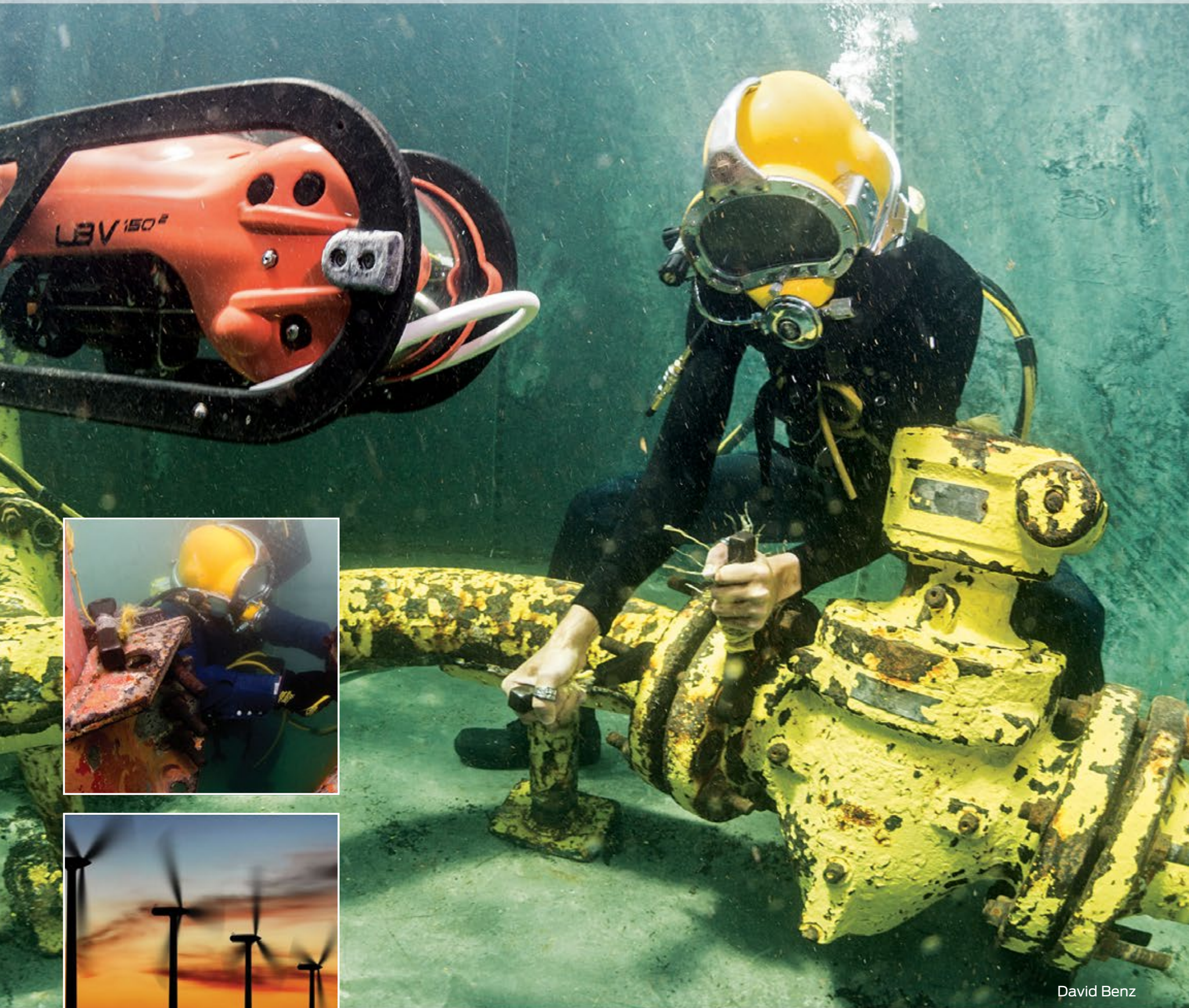
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David Benz

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**GRAVITATION IS NOT RESPONSIBLE
FOR PEOPLE FALLING IN LOVE.**

Albert Einstein



NEWTON

DIVE COMPUTER WATCH



BLACK/BLACK



BLACK/BLUE



BLACK/PINK



BLACK/YELLOW



BLACK/BLACK

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